PLAY YOUR WAY TO COMPLIANCE: A VALIDATION STUDY ON A PARENT TRAINING PROGRAM'S EFFECTS ON COMPLIANCE IN PRESCHOOLERS WITH AUTISM SPECTRUM DISORDER

by

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ABSTRACT

The current study evaluated the efficacy of a parent training treatment package using errorless compliance training to increase compliance in preschoolers with autism spectrum disorders (ASD). The study included three parent-child dyads that received a single parent training session using video modeling and direct instruction. A nonconcurrent multiple baseline design was used to evaluate what effects the treatment package had on increasing compliance rates in preschool-aged participants. The compliance rates of participants were coded during parent-led compliance sessions once per week to determine treatment efficacy. Parents also completed social-behavioral checklists pre- and post treatment to determine changes in parenting stress and externalizing behaviors in children. Parent fidelity with the treatment components was evaluated via telehealth during each phase of the study and at the end of the program. Effect size was calculated along with the use of visual analysis to examine the efficacy of the parent training treatment package.

TABLE OF CONTENTS

LIST OF TABLES

Tables

LIST OF FIGURES

Figures

CHAPTER 1

INTRODUCTION AND LITERATURE REVIEW

Autism spectrum disorder (ASD) is a developmental disability that includes deficits in social communication and social interaction and restricted, repetitive patterns of behavior, interests, or activities (American Psychiatric Association [APA], 2013). Individuals with ASD encounter difficulties in developing and maintaining relationships, understanding nonverbal cues and using appropriate nonverbal communication, and understanding social rules and protocols. Impairments in ASD impact individuals across the lifespan, with increasing social impairments and isolation through childhood and adolescence (Bauminger, Shulman, & Agam, 2003), and poor academic achievement, unemployment, and mental health concerns in adulthood (Farley et al., 2009; Howlin, Goode, Hutton, & Rutter, 2004).

Because of these impairments, individuals with ASD often have co-occurring mental health concerns. Studies have shown that children with ASD suffer from anxiety and mood disorders at a greater rate than the general population (Kim, Szatmari, Bryson, Streiner, & Wilson, 2000). In addition to core deficits, impaired understanding of verbal and nonverbal communications of others and social rules and conventions often results in inappropriate social interactions and challenging behaviors such as aggression, temper tantrums, and noncompliance in children with ASD (Dawson, Matson, & Cherry, 1998;

Matson, Dixon, & Matson, 2005). Of 169 children ages 1.5 years to 5.9 years diagnosed with autism, Hartley, Sikora, and McCoy (2008) found that one-third of the children's scores on the Child Behavior Checklist (CBCL) fell at the clinically significant range for Total Problems and Externalizing Problems. Clinically significant scores were also found on symptom scales for a high percentage of children: Withdrawn (70%), Aggression (22.5%), and Emotionally Reactive (18.2%).

Researchers have found that such behavior problems in children with ASD not only exacerbate social rejection and isolation, but also significantly impact the levels of stress among parents. Studies have found that challenging behaviors contribute to parent stress more so than deficits in daily living skills (Estes et al., 2009; Lecavalier, Leone, & Wiltz, 2006; Schieve, Blumberg, Rice, Visser, & Boyle, 2007). Parents and caregivers frequently report noncompliance as one of the most prevalent behavior problems in children, and it is considered a keystone behavior in the later development of severe conduct problems and antisocial behaviors (Forehand & McMahon, 1981; McMahon & Forehand, 2003). When a child is able to comply with requests, the child is able to actively engage in learning new skills and prosocial behaviors (Rhodes, Jenson, & Reavis, 1993). When a child demonstrates noncompliance, a coercive cycle between parents and a child often occurs and interferes with the child's ability to learn new skills and behaviors and impacts the parents' ability to positively interact with their child (Patterson, 1982).

The coercive cycle posits that there are reciprocal effects between parenting practices and children's behavior. Specifically, a child's antisocial or aggressive behaviors may elicit a negative reaction from parents, which in turn escalates the child's

aggressive behavior and the cycle repeats until one participant gives in to the other. As children learn this pattern of behavior over time within the family, it carries over into social interactions with others outside the family, resulting in conduct problems in later developmental stages (Dishion & Patterson, 2006; Shaw & Bell, 1993). According to Smith et al. (2014), the coercive interactions between parent and child are a stronger predictor of subsequent childhood noncompliance and oppositional behaviors than the behaviors themselves that led to the coercive cycle initially.

According to Matson, Mahan, and Matson (2009), "autism spectrum disorder is one of the most problematic and heavily studied childhood disorders" (p. 868) with social and behavioral concerns that are serious and life-long. The Centers for Disease Control and Prevention (CDC; 2014) show that 1 in 68 children in the United States has an autism spectrum disorder (ASD), and a comparison in overall prevalence rates of ASD shows a 123% increase between the years of 2002 and 2010. Given the increasing prevalence rates of young children with autism and its effects throughout the lifespan, the development and implementation of effective parent training programs is necessary. As effective parent training programs are implemented for children with ASD, it is more likely that individuals with ASD will engage in functional activity and prosocial behaviors, decreasing the prevalence of comorbid conditions associated with ASD.

Parent Training

Parent training has been defined as an "indirect service delivery in that the practitioner trains parents to apply treatment to children" (Shriver, 2008, p. 26), a set of procedures in which "parents are trained to alter their child's behavior at home" (Kazdin,

1997, p. 35). Parent training programs are also described as interventions in which "parents actively acquire parenting skills" (Kaminski, Valle, Filene, & Boyle, 2006).

From the work of early researchers, an operant model of parent training was established with a simple focus to teach parents how to provide positive reinforcement and mild contingent consequences for deviant behaviors. A wealth of parent training programs stemming from this operant model showed promising evidence: that parents can make significant and meaningful differences in their child's deviant behaviors. The application of parent training began with research conducted by Williams (1954) and Hawkins, Peterson, Schweid, and Bijou (1966), who found that the use of operant extinction procedures could be taught to, and implemented by, parents to effectively reduce tantrums and aggression.

Additionally, the efficacy of parent training procedures were evaluated on negativistic, noncompliant, oppositional, aggressive, autistic, and delinquent behaviors, as well as speech deficits and somatic illnesses (Bijou, 1984). In his review (1977) of parent training techniques, Graziano stated, "utilizing parents may be the single most important development in the child therapy area" (p. 257). With the success of these initial studies and using parents as partners in the intervention process, research on parent training practices increased.

Patterson and colleagues (1976) were the first to develop a manualized parent training program. Patterson and colleagues developed behavioral parent training (BPT) centered on the idea that through modification of the parent's behavior, a change in the child's behavior would subsequently occur and reduce the coercive style of communication between parents and children often maintained by negative

reinforcement. Temper tantrums were identified as common coercive behavior demonstrated by children whereas harsh punishment, physical or psychological, was identified as coercive behavior demonstrated by parents. An example of the coercive cycle is when parents make a request of their child. The child begins to whine and eventually throws a tantrum. As a result, the parents revoke the request and both the child and the parents have escaped the situation.

Current Parent Training Programs

Based upon the coercion theory, the *Living with Children* manual was developed; is also referred to as the Parent Management Training-Oregon (PMTO). According to Forgatch and Patterson (2010), the PMTO intervention "empowers parents in their use of positive parenting strategies and to reduce their reliance on more coercive approaches" (p. 166). There are three main goals of the PMTO program: 1) to focus on strengths, 2) to give effective directions, and 3) to teach through encouragement.

The parenting program can be completed in either group or individual format. When conducted in a group format, weekly sessions include only parents and range from 60 to 90 minutes across 14 sessions. Used in an individual format, weekly sessions typically include the child and range from 60 to 90 minutes across 25 to 30 sessions, depending on the specific needs of the family. Both formats incorporate homework for parents to generalize skills and midweek phone calls to troubleshoot issues and to promote the use of newly acquired skills (Table 1). Since its inception, PMTO has been extensively validated as a well-established treatment for children with conduct problems (Brestan & Eyberg, 1998; Patterson & Fleischman, 1979).

Table 1. Parent Training Programs

	Living with Children	Helping the Noncompliant Child	Parent Child Interaction Therapy	Incredible Years	Defiant Child	Parent Management Training	The Tough Kid Parent Book
Age	3-14	3-8	2-8	2-8	4+	2-16	3-13
Child present		X	X		X		
Number of weeks	5-12	12	12	10-14	12-16		
Duration of session (min)	60-90	75-90	60-90	120	60	45-60	
Frequency per week		2		1	1	1	
Manualized	X	X	X	X	X	X	X
Training required			X	X		X	
Cost	$14	$34-65	$3000	$1300	$25	$33	$15
Group	X		X	X	X		X
Individual	X	X	X	X	X	X	X
Didactics		X	X	X	X	X	X
Discussion		X		X	X		X
Video-based instruction				X			
Other technology		X	X	X			
Intake	X	X	X				
Observations	X	X				X	
Handouts		X		X		X	X
Homework	X	X	X	X		X	X
Performance feedback		X		X	X	X	
Performance criteria		X		X	X	X	
Daily parent report	X					X	
Parent collects data	X				X	X	X

Several studies have also found the treatment to be superior to control groups (Alexander & Parsons, 1973; Bernal, Klinnert, & Schultz, 1980; Firestone, Kelly, & Fike, 1980).

Subsequent parent training programs were also highly influenced by Patterson's research. Forehand and McMahon (1981), using the tenets of the coercion theory, created a parent training program to reduce disruptive and noncompliant behaviors. The goal of *Helping the Noncompliant Child* (HNC) is to replace the coercive cycle of negative parent-child interactions with positive interactions in which parents learn to effectively give alpha commands in order to reduce the likelihood of problem behavior and the initiation of the coercive cycle.

Parent Child Interaction Theory (PCIT) (Eyberg, 1982) also draws upon the coercion theory as a staple feature of the program; however, it departs from the previous packages as the main focus of PCIT is on the quality of parent-child interactions (Hanf, 1969). The goal of PCIT is to restructure the patterns of parent-child interactions to foster a warm relationship between parents and children. In order to achieve the goal of this program, parents are coached during in vivo play with their child by using a "bug in the ear" technique. This technique allows parents to learn both Child Directed Interaction (CDI) and Parent Directed Interaction (PDI) skills. CDI focuses on parents engaging their child in play to strengthen the relationship, whereas PDI focuses on parents using specific behavior management strategies. PCIT is considered to be an evidence-based treatment for young children with behavior disorders (Eyberg, Nelson, & Boggs, 2008).

Similarly, The Incredible Years program targets parent-child interactions to decrease conduct-disordered behaviors in children. It is conducted in a group format using video models to train parents. The Incredible Years focuses on not only

strengthening parent-child interactions, but also teaching and strengthening parenting competencies: positive communication, play skills, and limit setting. Based on several studies that reviewed the Incredible Years, both parent report and observed behaviors in the home showed decreases in deviant behavior (Spaccarelli, Cotler, & Penman, 1992; Webster-Stratton, 1984, 1990, 1994; Webster-Stratton, Kolpacoff, & Hollinsworth, 1988).

The Parent Management Training (PMT) program also draws upon coercion theory and altering parent-child interactions while incorporating principles of applied behavior analysis to change both parent and child behaviors (Kazdin, 2005). PMT has an extensive literature base supporting the efficacy of the program (Kazdin & Weisz, 1998). Parents who had children with significant behavior problems participated in PMT for 9 weeks and showed a significant decrease in problem behaviors based on observational data. In addition, these results maintained at a 1-year follow-up, and the findings have been replicated in a study of 101 participants (Webster-Stratton & Hammond, 1990). After participants concluded PMT, the children's deviant behaviors were reduced from clinically significant to nonclinical levels of functioning. Moreover, treatment gains were reported to maintain at 1 to 3 years posttreatment (Kazdin, 1997).

Common Parent Training Components

It was estimated that over 400 parent training reports were in circulation, treating a myriad of behavior problems in children (Maughan, Christensen, Jenson, Olympia, & Clark, 2005). Given the breadth of programs, these programs incorporate many different training components in format or delivery. Despite the differences, the components all

share a common objective in teaching parent strategies to increase positive behavioral outcomes in children, and, according to Johnson et al. (2007), program objectives must ensure that parents develop certain skills in behavior management (Table 2). Parent training curricula need to focus on teaching antecedent strategies (i.e., proactive strategies to prevent problem behaviors), teaching strategies (i.e., strategies to teach new behaviors and skills), and consequence strategies (i.e., strategies for responding to problem behavior). Basic skills that parents need to develop include learning how to effectively deliver instructions, appropriately provide reinforcement, and consistently apply rules and consequences.

Homework is the most common component included in evidence-based parent training programs. Every program listed in Table 2 requires parents to complete homework in some fashion, whether it is to review materials or actively practice new skills. Because parents are acquiring a new skill in a setting outside of their home, having ample opportunities to practice the skill(s) taught is necessary for skill acquisition. Homework assignments require parents to collect daily or weekly data and return this information to the practitioner; however, this is less common than many other forms of homework. Additionally, handouts or didactics are commonly included in parent training programs to educate and support a newly acquired skill. Handouts are provided in many different formats such as refrigerator magnets to cue parents of program procedures (Webster-Stratton, 1994).

A common feature of parent training programs is to begin with a psycho-educational component. It is thought that parents of children with autism need background information to help them understand their child's diagnosis. Education is

Table 2. Skills Included in Parent Training Programs

	Living with Children	Helping the Noncompliant Child	Parent Child Interaction Therapy	Incredible Years	Defiant Child	Parent Management Training	The Tough Kid Parent Book
Commands		✓	✓	✓	✓	✓	✓
Praise	✓	✓	✓	✓	✓	✓	✓
Attending		✓	✓	✓	✓	✓	✓
Play skills			✓	✓	✓		
Limit setting		✓		✓	✓		
Rules		✓		✓			
Planned ignoring		✓	✓	✓			✓
Point chart	✓			✓	✓		✓
Incentive program	✓				✓		✓
Response cost	✓		✓	✓			
Time-out	✓	✓	✓	✓	✓		
Imitation			✓				
Self management							
Reflective statements			✓				
Family meeting							✓
Negotiation							✓

often provided as information about typical child development and the symptoms and characteristics associated with autism (Kaminski, Valle, Filene, & Boyle, 2008). Additionally, some programs include education on the types of treatment programs that are available to children and families with autism and the research evidence to support their use.

Consistent with other components, feedback is commonly incorporated into programs to increase parent skill acquisition. Performance feedback is a technique to provide information on the implementation of a skill. Feedback can be provided in varying formats such as direct coaching, observations, and/or performance feedback.

Programs that utilize in vivo coaching commonly use "bug in the ear" technology to guide the parents while they are in session with their child (Eyberg, 2008; Jones & Forehand, 2014). Clinicians also incorporate observations to assess mastery of parenting skills taught in programs. Observations can be used to review if the parent is utilizing skills and/or procedures outlined in a parent training program.

Parents can receive verbal or visual feedback from a program facilitator; verbal feedback is given by reviewing how a parent completed a procedure. Visual feedback consists of viewing collected and graphed data on performance and is commonly used in parent training programs to review the child's change in behaviors. Analyzing data and objective pieces of information allows the clinician to address possible strengths and weaknesses of implementation as well as to modify any parts of a program. Finally, but less commonly implemented, is video feedback in which parents demonstrate and record their new skills with their children. Clinicians and parents then review a video session and discuss successes or difficulties in implementing the specific procedure or skill set;

however, it is unclear whether providing feedback to parents alone is enough to obtain parent skill acquisition (Shanley & Niec, 2010).

More recently, parent training programs have incorporated the use of technology, specifically video modeling, as a component. The Incredible Years is a program that has evaluated the use of a video format to deliver parent training procedures, in which the videos depict parent-child interactions and discussion of behavior management principles. Results of several studies provided evidence that incorporating video modeling (for parents and children) is superior to a waitlist group (Webster-Stratton, 1990, 1992; Webster-Stratton & Hammond, 1997). Meharg and Lipsker (1991) also implemented a video modeling intervention to teach parents to give clear commands and provide contingent reinforcement. Results indicated that treatment effects were not significant as moderate to small effect sizes were reported. More recently, Kahn (2012) evaluated the effects of a video modeling intervention to increase positive parenting statements to children with ASD. Although only a slight improvement was observed in parent behavior, results indicated a decrease in parent report of child problem behaviors.

Many manualized parent training programs exist with common objectives, but they have varying degrees of success in increasing prosocial behaviors and generalizing these behaviors to new settings. The programs have many overlapping components, but they also vary in methods and skills targeted. The structure of the parent training programs is central to the success of the program, but it is also important to evaluate the additional components of efficacious parent training programs to determine what factors may contribute to positive outcomes. In summary, only a slight improvement was observed in parent behavior.

Efficacy of Parent Training Programs

There has been a proliferation in studies investigating the utility of behavioral parent training programs (BPT) to increase skill acquisition and reduce maladaptive behaviors in children. Serketich and Dumas (1996) conducted a meta analysis of 26 studies to review the effectiveness of parent training in children who displayed antisocial behavior such as aggression, temper tantrums, or noncompliance. They found that children whose parents participated in parent training were better adjusted than 81% of children who participated in another treatment or no treatment at all. The effects also generalized to the school setting, in which children whose parents received parent training were better adjusted than 75% of children whose parents did not. Additionally, parents were better adjusted themselves after participating in parent training, and many of the included studies demonstrated maintenance of improved behavior in children with some follow-ups occurring a year posttreatment.

Maughan, Christensen, Jenson, Olympia, and Clark (2005) also evaluated the effectiveness of BPT as a treatment for children with externalizing behavior disorders. A total of 79 studies were included in the meta analysis, which found a mean effect size of .54 for single-subject studies, .30 for between-subject studies, and .68 for within-subject designs. Although this finding suggests that BPT is not as effective as once believed (Serketich & Dumas, 1996), the effects indicate that BPT is still an effective intervention for behavior modification and is most effective for children ages 9 to 11. The researchers also found that treatment efficacy was significantly affected by the number of treatment sessions; programs with one to five sessions had a larger effect size than programs using more treatment sessions.

Consistent with these findings, Kaminski and colleagues (2008) supported the use of parent training programs in changing parenting behavior and reducing child behavior problems through a metaanalytic review of 128 studies. Effect sizes were larger for stand-alone parent training programs than programs part of a package of interventions or those that included supplementary services (e.g., vocational training, stress management). Additionally, programs that directly targeted parenting skills produced better outcomes than ancillary focuses.

Kaminski et al. also conducted a component analysis to evaluate the effectiveness of program features such as how instruction is delivered and what skills are taught to parents. Components associated with higher effect sizes were indicated for programs that provided instruction on emotional communication, provided instruction on responding consistently to problem behaviors, and required parents to practice their newly acquired skills with their child, regardless of the program content and delivery. Larger effects were found from programs that engaged parents through modeling and role-playing of specific behavior management skills: attending (positive-child interactions), positive reinforcement, planned ignoring, providing clear instructions, and using time out from reinforcement. In particular, parent training on positive parent-child interactions was found to be predictive of behavioral outcomes for both parents and children.

Parent Training for ASD

Research on parent training to address disruptive behaviors and conduct problems has been the most widely studied; however, this research base is relevant in addressing problem behaviors for children with ASD. Many parent training programs for children

with ASD share similarities in their focus on operant conditioning and using the principles of applied behavior analysis to teach positive parenting strategies (Brookman-Frazee, Vismara, Drahota, Stahmer, & Openden, 2009). In addition to these programs, parent training has also been evaluated as an intervention for children with ASD to target behaviors that vary widely from toileting behaviors (Kroeger & Sorensen, 2010) to communication (Elder, Valcante, Yarandi, White, & Elder, 2005) to anxiety (Love, Matson, & West, 1995) to social skills (Laugeson, Frankel, Gantman, Dillon, & Mogil, 2011; Radley, Jenson, Clark, & O'Neill, 2014). Across these studies, parents were trained how to work with their children using behavioral principles to address target behaviors.

Because social skills are a core deficit for children with ASD, parents have been a part of teaching social skills to their children in order to increase generalization and maintenance of new skills. The Program for the Education and Enrichment of Relational Skills (PEERS®) (Laugeson, Frankel, Gantman, Dillon, & Mogil, 2011) is a social skills intervention for adolescents with ASD that includes a parent training component across 14 weekly sessions. Research has shown that parent-assisted training was effective in decreasing autistic mannerisms and increasing frequency of peer interactions and overall social skills. Similarly, Radley and colleagues (2014) evaluated the feasibility and efficacy of a parent-facilitated social skills program and found substantial improvement (ES = 0.64) in social engagement for program participants.

Noncompliant behaviors in children with ASD have also been the subject of research involving parent training. Butter (2007) implemented a parent training program for parents of children with ASD with lessons targeting noncompliance, irritability, tantrums, aggression, and self-injury. Following intervention, a decrease in

noncompliance and irritability was observed along with an increase in functional daily living skills. Marchant, Young, and West (2004) trained parents to provide effective and instructive praise and to use corrective procedures to address noncompliance. Additionally, parents provided direct instruction to their children on the steps and behaviors that resulted in compliance and reward (e.g., look at the person, say okay, do it quickly, and finish). The study found that parents could successfully learn and implement the strategies to teach and reinforce compliance.

Ducharme (1993) developed the *Errorless Compliance Training* (ECT) program in which parents are trained to systematically deliver increasingly demanding requests and provide positive reinforcement in order to gain compliance in children with ASD. ECT stems from errorless learning, a behavior analytic strategy designed to increase a child's opportunities for success and reduce errors in responding. Parents determine the probability that their child will comply with a given request and requests are placed on a hierarchy in which they will be delivered based on the probability of compliance. Parents begin the program by delivering requests that are easier for children before delivering more difficult requests that may lead to errors. As Barkley (2000) suggests, ECT focuses on a positive antecedent approach unlike other programs that teach parents to use aversive procedures or punishment. ECT has been shown to be effective in increasing compliance to various types of parental requests including academic, play, and adaptive tasks and behaviors (Ducharme, 1993, 1994; Ducharme & Ng, 2012; Ducharme, Popynick, Pontes, & Steele, 1993).

While the literature base has demonstrated the utility of parent training as a component in interventions for children with an ASD, it is also important to consider the

factors that contribute to its effectiveness. Osborne, McHugh, Saunders, and Reed (2008) evaluated parent training programs with 72 children with an ASD. Results indicated that setting limits early in training was central to success in parent training. It was also evident that instruction in behavior management was critical in helping parents reduce parenting stress and become more effective in implementing skill acquisition programs. Matson, Mahan, and Matson (2009) also highlighted the importance of targeting operationally defined behaviors that are treatable, using established consequences, and maintaining consistency throughout training. The parent training literature for children with ASD suggests that early intensive behavioral interventions, which include parent training, are highly effective in treating deficits associated with ASD.

Evidence-Based Practices

Many interventions exist to address challenging behaviors, but it is critical that practices are based on empirical research. Educational, psychological, and professional associations have emphasized the implementation of evidence-based practices in order to provide the most effective treatments for individuals with ASD.

Similar to medical guidelines for evidence-based practice, the American Psychological Association (APA) has provided guidelines to encourage improving patient outcomes through informing practicing clinicians of current research (American Psychological Association [APA], 2006; Chambless et al., 1996). APA has defined evidence-based practice as "the integration of the best available research with clinical expertise in the context of patient characteristics, culture, and preferences" (APA, 2006, p. 1). APA delineates the goals of evidence-based practice as improving overall patient

outcomes, making mental health care more cost-effective, and increasing the accountability of practitioners. APA also defines the types of research designs that best contribute to the development of evidence-based practice. Traditional random controlled trials and meta-analyses provide stringent measures of treatment efficacy; however, clinical observations, qualitative research, single-subject designs, case studies, and process-outcomes studies also contribute to the empirical evaluation of evidence-based practices.

Using the criteria presented by Chambless and colleagues (2006), Division 12 of the APA has attempted to classify empirically evaluated practices based on the level of rigor and amount of research demonstrating positive outcomes. For a practice to be considered well-established, a minimum of two well-conducted group design studies, or nine well-conducted single-subject studies, that demonstrate substantial positive outcomes, must be conducted by different researchers. In order to be considered a probably efficacious practice, positive outcomes must be demonstrated by two group design studies or at least three single-subject design studies. The guidelines provide a useful, concrete definition of evidence-based practice against which treatments may be measured. Additionally, the guidelines provide researchers with specific directions for establishing evidence-based practices through empirical analysis.

O'Donohue and Ferguson (2006) suggest that several weaknesses exist in using APA's criteria for selecting evidence-based practices in applied settings. First, studies found to be well-established are often based on statistical significance, rather than clinical significance. Clinical significance refers to positive clinical outcome for the consumer, instead of focusing solely on observed changes due to the introduction of an independent

variable. O'Donohue and Ferguson suggest that while some treatments show statistically significant outcomes, they may fail to produce meaningful results. Second, the criteria proposed by APA (2006) and Chambless et al. (1996) evaluate efficacy, the extent to which a treatment is beneficial; however, effectiveness, which is the successful translation of an efficacious treatment to a community or practice setting, is more valued in the clinical setting. Third, studies often exclude participants with comorbid conditions, which contrast with patients who often present with more than one condition in clinical settings and for which research findings may no longer be relevant or effective. Finally, O'Donohue and Ferguson criticize the bias for group design studies and inferential statistics that often eliminates single-subject studies as well as withdrawal and multiple baseline designs.

Although applied behavior analysis (ABA)-based interventions have been well documented as a treatment program for autism (Campbell, 2003; Matson, Benavidez, Compton, Paclawskyj, & Baglio, 1996; Volkmar, Lord, Bailey, Schultz, & Klin, 2004), ABA-based interventions are often excluded from evidence-based practice lists due to the weaknesses of the EBP criteria proposed by O'Donohue and Ferguson (2006). Notwithstanding, several ABA-based treatments have been determined to be well-established or probably efficacious. Many of these treatments originate from "first generation behavior analysis" (O'Donohue & Ferguson, 2001), and a lack of current research using ABA principles is apparent when examining evidence-based practice lists using Chambless et al. (1996). O'Donohue and Ferguson suggest that new research focus on "new-school" behavioral principles such as response deprivation, matching, and behavioral momentum as well as the use of ABA treatments for individuals other than

those affected by autism or developmental disabilities in order to expand the research of ABA treatment.

The National Autism Center (NAC, 2009) has disseminated the literature base on interventions for individuals with ASD. Many ABA treatments have been found to be effective. The National Autism Center has outlined the treatments in a *National Standards Report* and has categorized the treatments into three areas: established, emerging, and unestablished. Some of the criteria for established treatments include research evidence of immediate and long-term beneficial effects and evidence that the treatment does not produce harmful effects. Although research has suggested that these treatments are effective, there is no indicator as to whether it will be effective with any given individual, and professional judgment is required. Emerging treatments are those that do not have enough research to provide support for treatment effectiveness or lack thereof. These should be used with caution as treatment effects (positive or negative) have not been thoroughly studied and consideration of these treatments should be conducted through informed decision-making. An unestablished treatment suggests that there is little to no evidence to support it use. Treatments may also be classified as unestablished if they have been found to produce harm and should not be part of a treatment plan. The *National Standards Report* provides rigorous examination of treatments and provides guidelines for determining best practices. The National Autism Center has also included feedback from other organizations in order to factor in critical findings about treatments outside of the research setting. The NAC has identified the critical role of professional judgment, values and preferences, and treatment provider capacity in the selection of use of evidence-based practices.

Evidence-Based ABA Treatments

The *National Standards Report* classifies antecedent and behavior packages as established treatments for children with ASD, and within these packages are specific applied behavior analytic techniques that have been shown to effectively increase skill acquisition and reduce maladaptive behaviors.

Errorless Learning

The seminal work by Terrance (1963) led to the examination of errorless learning, a set of prompting and fading procedures designed to reduce incorrect responding and increase discrimination abilities. In contrast, trial-and-error learning creates opportunities for errors to occur in which an individual learns what actions lead to particular consequences. As suggested by Mueller, Palkovic, and Maynard (2007), many studies have shown that the selection of errors can negatively impact children and lead to problem behaviors and negative emotional responses. Given that children with ASD struggle to learn discriminations even with effective prompts (Schriebman, 1975) and show stimulus over selectivity (Lovaas, Schreibman, Koegel, & Rehm, 1971; Ploog, 2010), errorless learning decreases the chances of making errors and exacerbating behaviors and increases the opportunities for reinforcement when learning new skills and behaviors.

Born-Miller (2002) evaluated the implementation of errorless learning with two children with ASD who did not appear to learn through trial-and-error teaching. The intervention was found to increase one child's response to verbal instruction and to increase the ability to expressively identify numbers in the second child. In another study,

errorless learning was compared to a trial-and-error approach in learning words (Warmington, Hitch, & Gathercole, 2010). The findings suggested that children who followed the errorless learning approach not only were able to learn more words, but also learned them at a faster rate. In addition to skill acquisition, errorless learning has shown to be an effective approach in decreasing noncompliance. Ducharme (1993) implemented the intervention with four children with development disabilities who, on average, complied with parent requests 44% of the time during baseline. After an errorless compliance training, compliance rates were over 80% and maintained at a 2-month follow-up. More importantly, it was found that maladaptive behavior in response to parental requests decreased from a pretreatment mean of 51% to a treatment mean of 10%.

Precision Requests

Another strategy to increase compliance and reduce maladaptive behavior is precision requests. The precision request structures an interaction with a child to be concise, predictable, and respectful, while maintaining adult authority and increasing the likelihood of child compliance (De Martini-Scully, Bray, & Kehle, 2000; Musser, Bray, Kehle, & Jenson, 2001; Neville & Jenson, 1984). Clear and concise instructions serve as a discriminative stimulus, or a cue, of the specific environmental event or condition to which a child is expected to exhibit a behavior. After an instruction is given, the child learns that a specific consequence (reinforcement) will follow if she or he exhibits the appropriate behavior, and a separate consequence will follow if she or he exhibits inappropriate behavior.

A precision request is given utilizing an imperative statement rather than a question. For example, instead of saying, “Can you…” a parent would state, “Johnny, please brush your teeth” while maintaining eye contact with the child. Precision requests are given 3 to 5 feet from the child with eye contact, use the child’s name to gain their attention, and are given in a calm, neutral voice. For each precision request sequence, the child is provided with a “Please” request with the expected behavior specifically described, given 3 to 5 seconds to begin compliance of the instruction, and then given a second instruction with a “Need” request (“Johnny, I need you to…”) if compliance is not observed after the “Please” request. If the child does not comply after the “Need” request, a parent must follow through with delivering a predetermined consequence for noncompliance.

Many behavior management programs incorporate the use of precision requests and have found promising results in effectively reducing noncompliance in home and school settings. In a study by Mackay, McLaughlin, Weber, and Derby (2001), a precision request intervention was implemented by the parents, sibling, and childcare provider. It was found that compliance rates increased in the home and community setting. Precision requests as a stand-alone intervention were also examined by Yeager and McLaughlin (1996). The researchers evaluated three conditions (precision request alone, time-out ribbon alone, combined precision request and time-out ribbon) to increase compliance of a preschool student. Although all three conditions produced an increase in compliance in the classroom, the use of precision requests alone maintained compliance by the end of the study.

Bryce and Jahromi (2013) examined the relationship between the types of

commands delivered by parents and the compliance rates of children with autism. The study found that parents most often delivered indirect commands (polite request or suggestion) or unclear commands with no overt specification of an action; however, children with autism demonstrated higher rates of compliance when parents delivered direct commands that specified expected behavior. A possible explanation of this finding is that due to the inherent social deficits associated with autism, there may be interference in the child's ability to accurately infer a parent's instructions that are not explicitly stated. This finding supports the need for clear and concise instructions, such as those within the precision request sequence, when trying to obtain compliance from children with ASD.

Behavioral Momentum

Based on Newton's law of motion and the parallels between a behavior's resistance to change and the momentum of objects in motion, Mace et al. (1988) proposed an intervention called the "high-probability command sequence" to address noncompliance. This antecedent-based strategy requires parents and teachers to deliver a series of requests that a child is highly likely to comply with before delivering a difficult request that the child typically does not respond to.

The results of several studies indicate that behavioral momentum can be used across behaviors, settings, and disabilities (Davis & Brady, 1994; Davis & Reichle, 1996; Jung, Sainato, & Davis, 2008; Oliver & Skinner, 2003; Wehby & Hollahan, 2000). Wehby and Hollahan (2000) examined the use of behavioral momentum with a school-age child with learning disabilities who exhibited noncompliance when instructed to

complete a math assignment. Although results of the study found that the procedures did not increase overall task engagement, the intervention was able to reduce the latency to compliance. In another study, Banda and Kubina (2006) used behavioral momentum to help an adolescent with ASD to transition in the classroom. In addition to an increase in compliance, the intervention reduced the time to complete the transition as well as reduced the frequency of prompts given by the teacher. Davis, Brady, Williams, and Hamilton (1992) found that young children with behavior disorders showed increases in compliance when behavioral momentum was used. More importantly, the study found that the children were able to generalize with other adults who had never implemented behavioral momentum strategies before.

Positive Reinforcement

The majority of behavior modification programs include reinforcement procedures in order to change behavior in children. Based on the principles of operant conditioning, positive reinforcement occurs when a stimulus is presented as a consequence of a behavior and leads to an increase in that behavior. Positive reinforcement occurs in many forms, from delivering a tangible item to a praise statement, and its effectiveness depends on the level of value an individual places on the specific reinforcer. The use of positive reinforcement has been shown to be effective in addressing a range of childhood behaviors from toileting (Cicero & Pfadt, 2002; Rinald & Mirenda, 2012), to food selectivity (Knox, Rue, Wildenger, Lamb, & Liuselli, 2012), to play skills (Conner, Kelly-Vance, Ryalls, & Friehe, 2014) and on-task and academic behaviors (Dolezal, Weber, Evavold, Wylie, & McLaughlin, 2007).

Although Kaminski et al. (2007) did not find teaching parents to provide positive reinforcement to be predictive of program effects, all parent training programs incorporate reinforcement procedures as a necessary component. The ability to deliver effective reinforcement, as verbal praise or as a tangible reward, is a critical skill for parents to learn and implement in order to effectively respond to their child's engagement in appropriate behaviors. Positive reinforcement is used to help the child associate positive behaviors with rewards and increase their engagement in such behaviors in addition to breaking the coercive patterns of parent-child interactions.

Planned Ignoring

When children are engaging in inappropriate behaviors, attention can sometimes reinforce and maintain the problem behavior and contribute to the cycle of coercion. Thus, it is recommended that parents ignore problem behaviors as long as the behaviors are not severe enough to put the child or others at risk for harm. Planned ignoring is a form of extinction designed to weaken, decrease, or eliminate a behavior. The underlying assumption is that by withholding reinforcement, children will cease to engage in problem behaviors as they learn that these behaviors are no longer producing the same desired outcome (Alberto & Troutman, 2009).

Hester, Hendrickson, and Gable (2009) described planned ignoring as an effective strategy provided that adults ensure basic principles of immediacy, contingency, consistency, and specificity. Parents must immediately use planned ignoring contingent on the inappropriate behavior, be consistent in using the strategy, and specify the appropriate behavior when challenging behavior ceases and attention is provided.

Because some behaviors can be tough to ignore, Rhode, Jenson, and Hepworth (2010) recommend breaking eye contact, showing no emotion, and engaging in another activity or moving to another setting when children are engaging in challenging behaviors. These procedures were effectively used to address sleep problems in young children and an adult with developmental disabilities that exhibited challenging behaviors when settling into bed or during nighttime awakenings (Didden et al., 2002). The amount of nighttime disruption was significantly reduced from an average of 30 to 45 minutes to 1 to 3 minutes.

Video Modeling

Video modeling is the process of watching a video of a peer successfully demonstrating steps to a skill and the appropriate use of the skill or behavior. A child reviews the video over repeated sessions and is provided an opportunity to exhibit the behavior. The concept is based upon social learning theory (Bandura, 1977), which states that behavior is learned from the environment through observational learning. When a child is exposed to video modeling, learning occurs as individuals observe model(s) engaging in a particular behavior that elicits reinforcement. Children with ASD often struggle to learn naturally by observing and imitating the behaviors of others. Children with ASD may focus on extraneous details in the natural environment. Video modeling can be used to cue children to focus on the important steps to engage in a behavior.

Results of several studies indicate that video modeling is more effective than in vivo modeling and it is also a cost effective alternative to other forms of training (Bellini & Akullian, 2007; Miller, 2006). Additional studies found increased interaction time and

generalization of play skills to new toys, settings, and teachers for children with ASD after viewing video models of typically developing peers (Green et al., 2013; Nikopoulos, 2007; Nikopoulos, Canavan, & Nikopoulos-Smyrni, 2009). Similarly, Charlop-Christy and Danshevar (2003) found video modeling to be a fast and effective way to teach perspective taking that also resulted in stimulus and response generalization. Buggey (2005) examined the effects of video modeling on challenging behaviors (e.g., tantrums, physical aggression). Results indicated that the intervention was effective across all behaviors and across all participants in the study.

Generalization

Parent training programs take place in a variety of settings. Often, in an attempt to minimize the cost of parent training programs, they are conducted in hospital, clinic, outpatient, and community settings. Thus, the importance of skill generalization is imperative as parents are required to use newly acquired skills in their home environment. When children are incorporated into the parent training program, addressing generalization is also an important factor to consider. Therefore, making a skill easier to utilize for both parents and children is an important element of generalization and is evident in the idea referred to as "stickiness."

The concept of "stickiness" has been popularized by Malcolm Gladwell (2001), author of *The Tipping Point*. In the book, Gladwell explains what makes certain television programs and advertisements memorable for their target audience. Gladwell claims that through close attention to structure and format, the stickiness of a message may be enhanced. The idea of stickiness is directly applicable to parent training in its

efforts to enhance generalization of learned skills for both parents and children.

Gladwell presents the idea that repetition is central to enhancing the stickiness of a message. As a message is repeated to parents or children, they are better able to recall the information at a later point in time. Gladwell also proposes that the content should be creative, in that it should grab the attention of the target audience. As the presentation of the material becomes more appealing, the stickiness of the message improves.

In order to create a program that appeals to parents and children, elements must be incorporated to make the message stick. As the information becomes stickier, it is more likely that information may be recalled at a later date. This finding is especially applicable to parent training for adults and children: In order for a new skill to be retained in memory, elements of stickiness must be incorporated into the lesson. Heath and Heath (2009) have also examined the concept of stickiness and how stickiness of messages may be enhanced. *Made to Stick* provides a framework for enhancing the stickiness of a message using what they label SUCCESs: a simple unexpected concrete credentialed emotional story.

The concept of "stickiness" is one that has been popularized outside of the scientific community, but it can be linked to empirical research on generalization. Stokes and Baer (1977) suggested that although generalization is often approached as a passive phenomenon, attention to programming details would enhance the generalizability of newly acquired skills. Generalization-promotion is attempted through several strategies, all of which aim to promote generalization and the "stickiness" of the skill across time and new situations.

Through simply incorporating elements of stickiness into a message, the content

may be made more memorable. Some programs have aimed to enhance the stickiness and generalizability of their message through incorporating elements that have been found to enhance stickiness. The Incredible Years (Webster-Stratton, 1984) is a popular social skills program that has utilized many factors that have been found to enhance stickiness, and has subsequently been found to produce positive changes in prosocial behaviors in participants (Taylor, Schmidt, Pepler, & Hodgins, 1998; Webster-Stratton, Reid, & Hammond, 2004). Some elements of stickiness included in The Incredible Years program incorporated using videos that are watched multiple times (repetition), group discussion about video segments in order to foster interactivity, and use of high interest material. Overall, The Incredible Years has successfully incorporated elements of stickiness in order to better teach parent training programs as well as social skills for children.

Play Your Way to Compliance

The Play Your Way to Compliance treatment package is intended for young children with autism spectrum disorders who also exhibit noncompliance. It has been designed to address the shortcomings of other parent training programs for children and employs a number of evidence-based practices including errorless learning, behavior momentum, and video modeling. Play Your Way to Compliance addresses key skills in parenting behaviors, and the inclusion of videos, a jingle, and a game makes the program of high interest to parents and children while incorporating evidence-based practices that have been shown to aid in the acquisition, maintenance, and generalization of new skills and behaviors.

Play Your Way to Compliance has been designed to address noncompliance with treatment strategies that meet the criteria of evidence-based practice. Several of the components in Play Your Way to Compliance are classified as established treatments based on the evidence-based standards provided by the National Autism Center (NAC, 2009). The analysis completed by NAC for determining treatment evidence included the following: research design to suggest the degree of experimental control; measurement of the dependent variable to indicate accuracy and reliability of the data; measurement of the independent variable to express the extent of treatment fidelity; participant ascertainment, or correct inclusion and eligibility of the participants; and generalization to demonstrate the success of treatment effects across time, settings, people, and stimuli.

NAC has categorized errorless learning as an established treatment and as previously discussed, errorless learning has been found to be effective in increasing skill acquisition in individuals with ASD (Mueller, Palkovic, & Maynard, 2007). Additionally, the premise of errorless learning is incorporated into errorless compliance training (Ducharme, 1993), which has influenced the development of the Play Your Way to Compliance program. Behavioral momentum, positive reinforcement, and planned ignoring (i.e., extinction), which are also listed as established treatments by NAC, are integral components of the Play Your Way to Compliance program.

The Play Your Way to Compliance treatment package also emphasizes the importance of teaching compliance in the child's natural setting. NAC has identified Naturalistic Teaching Strategies as an established treatment, highlighting the strength of interventions that are implemented in natural settings that include the child's home and parents. In 32 studies reviewed by NAC, teaching skills in the natural environment was

associated with increased communication, interpersonal skills, learning readiness, and play skills for children aged 0 to 9 with autism spectrum disorders.

Furthermore, Play Your Way to Compliance incorporates Direct Instruction, a strategy designed to increase the rate of learning while promoting generalization of learned skills (Adams & Carnine, 2003; Marchand-Martella, Slocum, & Martella, 2004). Direct Instruction has been found to produce large effect sizes between .84 and .90, suggesting it results in better outcomes than other instructional strategies (Adams & Engelmann, 1996; Forness, Kavale, Blum, & Lloyd, 1997). Modeling, guided practice, and independent practice are central instructional procedures in Direct Instruction that are also central to the Play Your Way to Compliance program and are implemented throughout the program.

Overall, the Play Your Way to Compliance program includes many components that meet the criteria for evidence-based practice. Additionally, NAC has determined that these components qualify as established treatments for autism spectrum disorders, having proven their effectiveness across studies. Play Your Way to Compliance also employs instructional strategies found to increase the rate of acquisition and generalization of novel skills. Moreover, meta analyses of behavioral parent training programs have suggested that parents are able to learn and implement these evidence-based practices with their children, which improves both parent and child outcomes.

Although there is a breadth of efficacious treatments for autism, research has found that treatments are rarely used due to barriers such as complexity and compatibility. Research has suggested that innovative treatments that readily provide and utilize multiple evidence-based practices are more likely to be implemented in their

natural settings (Boardman et al., 2005; Dingfelder & Mandell, 2011). "Interventions that are most readily transported into community settings address a broad range of needs, with program materials and clear procedural guidelines" (Dingfelder & Mandell, 2011, p. 175). Of 10 comprehensive programs for children with autism, Lord (2005) indicated that only four programs are commercially packaged or have manuals readily available to the public for use. The Play Your Way to Compliance program addresses these concerns by providing a ready-made and available package with multiple evidence-based practices and clear instructions on implementation.

Summary

Noncompliance is one of the most prevalent behavior problems in children frequently reported by parents and caregivers and is considered a keystone behavior in the development of severe conduct problems and antisocial behaviors (Forehand & McMahon, 1981; McMahon & Forehand, 2003). Because children's ability to comply with requests is related to their ability to learn new skills and prosocial behaviors (Rhodes, Jenson, & Reavis, 1993), the development of quality research-based interventions to address noncompliance is imperative.

The treatment of noncompliance has focused on behavioral strategies often employed within parent training programs (Forehand & McMahon, 1981; Forehand & McMahon, 2003; Webster-Stratton, 1990). A common factor in parent training programs is the use of effective strategies such as behavioral rehearsal, modeling, coaching, and reinforcement. Although these interventions have been shown to be effective procedures for decreasing noncompliance, many parent training programs include a punitive

component in which parents learn time-out procedures to respond to challenging behaviors. Parent training programs can be costly and time consuming for families and for professionals who implement them, further impacting the issue of attrition rates of families in parent training programs (Barkley, 2000). Therefore, it is essential that interventions are effective in addressing noncompliance, but also positive, efficient, and cost-effective.

Purpose of the Study

The Play Your Way to Compliance treatment package is designed to save time and effort by providing parents with a complete package of all the necessary instructions and materials needed in order to effectively run the program independently. The program uses intervention strategies that have been proven to be effective in increasing compliance rates in young children. Moreover, the strategies are proven, practical, and positive. The treatment package also does not employ the use of aversive procedures. However, the effectiveness and acceptability of the Play Your Way to Compliance program has yet to be studied. Therefore, the purpose of this study is to evaluate the acceptability and effectiveness of the Play Your Way to Compliance Program for increasing rates of compliance in preschool children with autism spectrum disorders.

Research Questions

1. Will child compliance rates be higher than baseline compliance rates after receiving the Play Your Way to Compliance program as measured by direct observation?

   a. Compliance Data Sheets

2. Will child compliance rates to novel *low probability (red; less than 25%)* requests increase across the duration of the study?
   a. Generalization Sheets
3. Will fading edible reinforcers impact rates of participants' compliance with red requests during a maintenance treatment phase?
   a. Compliance Data Sheets
4. Will participants' compliance rates continue 3 weeks posttreatment?
   a. Compliance Data Sheets
5. Will parents be able to implement the Play Your Way to Compliance program with fidelity (i.e., number of steps accurately completed)?
   a. Fidelity Checklist
6. Will parents maintain fidelity of implementation at follow-up 3 weeks after completing the Play Your Way to Compliance Program?
   a. Fidelity Checklist
7. Will parenting stress decrease after receiving the intervention as measured by scores on the Parenting Stress Index?
   a. Parent Stress Index (PSI-4)
8. Will parents report a decrease in scores on the Externalizing Problems scale on the Child Behavior Checklist (CBCL; Achenbach) after receiving the intervention?
   a. Child Behavior Checklist, Externalizing Problems (CBCL)
9. Will parents report positive ratings on the Intervention Rating Scale regarding

participation in the intervention as measured by mean responses on a 6-point Likert scale?

   a. Modified Behavior Intervention Rating Scale (BIRS)

10. Will child participants report positive ratings on the Children's Intervention Rating Scale regarding participation in the intervention as measured by mean responses on a 4-point Likert scale?

   a. Children's Intervention Rating Scale

CHAPTER 2

METHODS

Prior to recruitment of participants, consent was obtained from the University of Utah Institutional Review Board (IRB). Consent was also obtained from a school that specializes in the treatment of children with autism spectrum disorders. The researcher contacted families identified on a waitlist for enrollment to the school by sending letters and/or email correspondence that briefly described the purpose of the study. If the parent(s) elected to have their child participate, they were given a brief screening packet that included a Direct Behavior Rating form (DBR), to ensure their child was appropriate for inclusion in the study.

Child Participants

Parents interested in having their child participate received a parent permission form for observations (Appendix A) to be completed. Once permission was received, the researcher conducted three 15-minute observations in order to confirm that the selected children were appropriate candidates for the study. These observations occurred in the participants' homes to obtain child compliance rates in their natural setting.

The researcher initially contacted 60 caregivers and received five responses.

Based on the five interested participants, four participants were identified as meeting the inclusion criteria. One child demonstrated compliance rates above 60% during in-home observations and therefore did not meet the criteria for inclusion in this study. A fourth participant was identified and participated in baseline and treatment phases of the study but did not complete the maintenance and follow-up portion of the study. Data from this participant were not included in the results of this study. The remaining three participants met inclusion criteria and were included in this study.

Each child participant was required to meet the following inclusion criteria.

1. Between the ages of 3 years 0 months and 5 years 11 months.
2. Have a current diagnosis of an autism spectrum disorder by a physician, psychologist, or psychiatrist or an educational classification of autism.
3. Obtain an IQ score at or above 70 on a standardized intelligence test, administered within the last 3 years by a qualified administrator.
4. Possess and demonstrate sufficient use of receptive and expressive language in order to respond to parent requests. Participants will be considered to have adequate expressive language for this study if they can verbally respond by saying “okay.”
5. Demonstrate low rates of interfering behaviors, such as self-injurious behaviors as measured by the Direct Behavior Report form and baseline observations (Appendix B).
6. Display compliance rates at or below 60% with a parent, as observed in the home setting through direct observations.

Exclusion Criteria:

1. Participants placed on nutritional diets such as gluten casein free programs will not be included in this study.

Participant Demographics

Participant 1 was a 5-year 2-month-old Caucasian male with a diagnosis of autism spectrum disorder given by a psychologist in a clinic setting. His cognitive ability was assessed using the Stanford-Binet Intelligence Scale, Fifth Edition. He earned a Full Scale IQ score of 90, A Verbal IQ of 85, and a Nonverbal IQ of 96. Participant 1 was able to communicate by speaking in full sentences. Based on parent ratings of the DBR, it was reported that Participant 1 required some support with self-help skills. The DBR was rated on a scale of 0 to 10, with 0 considered mild/never and 10 severe/always. Participant 1 was rated at a 9 for the frequency of his aggressive behaviors, a 0 for the frequency of self-injurious behaviors, and a 10 for the frequency of tantrum behaviors. Participant 1's caregiver rated the intensity of aggression as a 9, the intensity of self-injurious behaviors a 0, and the intensity of tantrums a 7 (Table 3).

Participant 2 was a 3-year 3-month-old male at the beginning of the study, with a diagnosis of autism spectrum disorder given by a psychologist in a clinic setting. He was given a cognitive screener that was administered when he was 1 year 8 months; scores of the screener were reported using age equivalence. Participant 2's cognitive scores estimated that he was functioning similarly to a typically developing 12-month-old (Table 3). Based on parent ratings of the DBR, Participant 2 was able to communicate by speaking a few words, primarily using American Sign Language. Based on ratings from the DBR, it was reported that Participant 2 required some support with self-help skills.

Table 3. Participant Demographics

	Participant 1	**Participant 2**	**Participant 3**
Child Age	5.2	3.3	4.2
Diagnosis	Autism	Autism	Autism
Measure	Stanford Binet	DAY-C (Screener)	Stanford Binet
FSIQ	90	12 months	106
Direct Behavior Rating			
Self-Help	Requires some support	Requires some support	Requires some support
Language	Full Sentences	Few Words	Full Sentences
Frequency Aggression	9	5	7
Intensity Aggression	9	5	6
Frequency Self-Injury	0	0	0
Intensity Self-Injury	0	0	0
Frequency Tantrums	10	5	7
Intensity Tantrums	7	7	7

On a scale of 0-10, Participant 2 was rated at a 7 for the frequency of his aggressive behaviors, a 0 for the frequency of self-injurious behaviors, and a 7 for the frequency of tantrum behaviors. Participant 2's caregiver rated the intensity of aggression as a 6, the intensity of self-injurious behaviors a 0, and the intensity of tantrums as a 7.

Participant 3 was a 4-year 2-month-old male at the start of the study. He received a diagnosis of autism spectrum disorder by a psychologist in a clinic setting. His Full Scale IQ was 106 on the abbreviated Stanford-Binet Intelligence Test Fifth Edition.

Based on parent ratings of the DBR, Participant 3 was able to communicate by speaking in full sentences. It was reported that Participant 3 required some support with self-help skills. On a scale of 0-10, Participant 3 was rated at a 7 for the frequency of his aggressive behaviors, a 0 for the frequency of self-injurious behaviors, and a 5 for the frequency of tantrum behaviors. Participant 3's caregiver rated the intensity of aggression as a 5, the intensity of self -injurious behaviors a 0, and the intensity of tantrums as a 7.

Parent Participants

In order to participate in the study, parents were required to have access to a computer or device such as an iPad/tablet with Internet access in their home. This requirement was necessary due to the utilization of remote-based services (i.e., Facetime/Skype) as a component of this study. Parents who participated in this study were also included as participants as they were trained to conduct compliance sessions, and data were collected on parental adherence with the Play Your Way to Compliance Program Steps. For each of the participants, one caregiver was elected to complete pre- and postreatment checklists.

Setting

All aspects of the study including baseline observations, parent training, treatment, maintenance, generalization probes, and follow-up sessions took place in the participants' home environment. During the parent training session, both caregivers were present for each of the three participants in the study. The researcher used a personal laptop to present all video-based training components. Each caregiver met training

criteria prior to conducting compliance sessions (Appendix H).

During the treatment phase of the study, parent compliance requests took place in a variety of rooms in the house: the bedroom, dining room, hallway, toy room, kitchen, and bathroom. Each treatment session began in a designated room of the house (i.e., living room) to watch the adult peer-modeling videos as well as the fasthands animation video for the child participants. Only the parent and child occupied the established room or quiet space while viewing their videos, and all other children were in other location(s) in the house. The room used for viewing did not have electronic equipment in use such as a television, radio, or any other device that caused background noise. The designated space was free from distractions such as toys, games, or family pets.

The parent participant conducted at least three sessions each week, using multiple rooms in the house based on the type of requests that were used. During one of the three required sessions, the researcher was physically present or used telepresence to observe the participants during the treatment phase.

Prior to the start of the session, the researcher provided all edible reinforcers. After viewing the adult peer-modeling videos, the parent watched the fasthands animation with their child before initiating the compliance session with the jingle, "Scooter Says." Once the jingle started, the researcher observed and recorded the parent providing compliance requests to the child. The researcher also prompted the parent to complete compliance requests in different locations in the home, as long as the request was suitable for multiple locations. For example, if the request was to "put in a puzzle piece," the request could be completed in the living room, and then again in a bedroom or in an office den. Generalization probe sessions as well as follow-up procedures were

collected in the home setting via Facetime (Appendix J).

Dependent Measures

Multiple measures were used to assess the effectiveness of the Play Your Way to Compliance program. The primary dependent measure was overall compliance rates to parental requests for each child participant. Another main dependent variable was the participants' compliance rates to novel red requests (generalization). The results were collected and analyzed to evaluate the impact of the intervention. Secondary measures of parental stress were collected to determine improvements associated with compliance training. Consumer satisfaction feedback concerning the intervention was also obtained through questionnaires from each participating parent and child.

Compliance

For the purpose of this study, compliance was defined as a child's overt initiation to a parent request within 5 seconds of the instruction being presented, without verbal protest (whining, crying, having a tantrum, telling a parent to wait, or verbal refusal). The child was also required to complete a request. Compliance rates were calculated for overall compliance of instructions across all levels of requests and for compliance of low probability instructions. Low probability (red) requests were the main focus of the study. Percent compliance was calculated by dividing the number of times the child complied by the total number of instructions presented and multiplying by 100. Compliance data were gathered using Compliance Data Sheets (Appendix G) via direct observations in the participants' homes and via telepresence.

Behavioral/Emotional Symptoms

Parents completed the Child Behavior Checklist preschool form for ages 1.5 to 5 years (CBCL; Achenbach & Rescorla, 2001), a questionnaire designed to assess children's behavioral and emotional competencies and deficits. The CBCL contains seven syndrome scales (Emotionally Reactive, Anxious/Depressed, Somatic Complaints, Withdrawn, Sleep Problems, Attention Problems, and Aggressive Behavior) and five DSM-Oriented Scales (e.g., Affective, Anxiety, Pervasive Developmental, Attention Deficit/Hyperactivity, and Oppositional Defiant Problems). Additionally, the CBCL has Internalizing, Externalizing, Total Problems, and a Stress Problems scales. Questionnaires were completed before and after treatment to assess changes in the behavioral or emotional symptoms of child participants. The Externalizing Problems scale was used to assess pre- and posttreatment change.

Parenting Stress

The Parent Stress Index- Fourth Edition (PSI-4; Abdin) was used to assess parent-reported stress and was administered to parents before and after treatment. The PSI-4 is a questionnaire designed to evaluate the amount of stress in a parent-child relationship. The questionnaire comprises two Domains: Child and Parent and a Total Stress Scale. The Child Domain consists of six subscales (Distractibility/Hyperactivity, Adaptability, Reinforces Parent, Demandingness, Mood, and Acceptability) and the Parent Domain consists of seven subscales (Competence, Isolation, Attachment, Health, Role Restriction, Depression, and Spouse/Parenting Partner Relationship).

Treatment Integrity

To assist in maintaining treatment integrity, a data sheet based on steps for effective delivery and reinforcement of compliance requests was used throughout the study. The researcher created and provided the checklist form on which the researcher and graduate research assistants checked the steps as each parent completed them during observation sessions in the home. Additionally, the researcher provided parents with a separate fidelity checklist of implementation steps as a reference sheet to ensure treatment integrity when the researcher was not present (Appendix H).

Consumer Satisfaction

Parent Questionnaire

Social validity of the intervention was assessed using a modified Behavior Intervention Rating Scale (BIRS; Elliott & Trueting, 1991). The parent questionnaire (Appendix I) allowed for evaluation of parent perceptions of the utility and acceptability of treatment components. It consists of 22 statements with ratings on a 6-point Likert scale ranging from *strongly agree* to *strongly disagree*. The questionnaire also contained four open-ended questions created by the researcher to allow parents to more specifically describe their thoughts about the intervention. Parents completed the questionnaire during the post intervention phase.

Child Questionnaire

A child version of the BIRS, constructed by the researcher, was used to evaluate child perceptions of the intervention (Appendix I). The Child Intervention Rating Scale

contains four statements, which are rated on a 4-point Likert scale that ranges from *strongly agree* to *strongly disagree*. The rating scale corresponds to a range of face icons from happy (strongly agree) to angry (strongly disagree) to make it easier for younger children to understand. The questionnaire also contained two open-ended questions for child participants to more specifically indicate their thoughts about the intervention. In order to accommodate a younger population and to ensure that the child participants fully understood each statement, the questionnaire was given on a one-on-one basis to each child participant by the researcher via Facetime/Skype on the last day of the treatment phase.

Research Design

A nonconcurrent multiple-baseline, multiple probe design across subjects (Cuvo, 1979; Horner & Baer, 1978) was used to evaluate the effectiveness of the Play Your Way to Compliance program for participants involved in the study. A multiple probe design allows the researcher to use intermittent probes to assess the effectiveness of an intervention when continuous data measurement proves impractical or unnecessary (Horner & Baer, 1978). Additionally, use of a multiple probe technique helps to control for threats to internal validity (Horner & Baer, 1978). This study consisted of four phases: baseline, treatment, maintenance, and follow-up. Parent treatment fidelity as well as generalization probes were collected during each observation. In addition, generalization probe sessions were conducted weekly via Facetime to monitor the child participant's compliance rates with novel red requests (requests that had never been given before).

At least three baseline probes were completed for each child participant across

several days. Each observation during baseline was conducted in the participants' homes when they were engaged in an activity with the parent. Once a stable baseline was achieved; child and parent participants then began the treatment phase of this study. During the treatment phase, compliance probes were collected weekly (i.e., green through red treatment phases). Once participants completed the final treatment phase where child participants' were 80% compliant with red requests, they began the maintenance treatment phase. This treatment phase included three sessions with the intent to fade the previous schedule of reinforcement. Maintenance sessions one through three included a variable ratio schedule of edible reinforcement that was 50%, followed by a variable ratio schedule of 25%, concluding with a variable ratio schedule of 0%. Three weeks following the conclusion of the maintenance phase, a follow-up compliance session was conducted using the same eight red requests that were given during the treatment phase. No edible reinforcement was given during the follow-up compliance session.

Materials

Observation Training Videos

Three videos created by the researcher were used to train a graduate student assistant to obtain interrater reliability with the primary researcher. The three videos were approximately 15 minutes in length and designed to resemble parent-child interactions. Each video demonstrated parents providing effective and ineffective delivery of instruction, effective and ineffective reinforcement procedures, and children exhibiting compliant or noncompliant responses.

Electronic Equipment

An Apple iPad or personal computer was used during direct observation sessions to observe and record compliance sessions. A personal computer, tablet, iPad, or smartphone was used by participants to view the multimedia files from the Play Your Way to Compliance program. Personal iPhones or smartphones were used for communication between the participating parents and the researcher. Specifically, iPads and iPhones offer a free HIPPA-compliant video chat software system, FaceTime, that was used to check in with parents and to conduct generalization probes at the end of each week. An additional application, Ink2Go, which allowed for recording of the video call sessions, was downloaded onto the researcher's computer. Video recordings permitted research assistants to view videos and collect data to ensure interrater reliability. Parents were offered a tutorial and assistance on how to access and use Facetime or Skype during the initial home sessions.

Materials Included in the Play Your Way to Compliance Program

The Play Your Way to Compliance treatment package included an instructional manual detailing how to implement and troubleshoot the program. The program outlined specific steps and strategies for parents to effectively deliver instructions and provide positive reinforcement to gain child compliance. A CD-ROM with printable probability checklists, reinforcer checklists, and data collection forms, which will be described later in the section, were included along with the following components.

Fasthands Animation and Child Peer-Modeling Videos

Fasthands Video

The program included fasthands animation video files in order to instruct child participants on how to follow directions. Fasthands animation teaches concepts through a recording of two hands drawing the definition of a concept and instructional steps along with animated characters and then speeding up the video feed by seven times. The program used a character named Scooter from the *Superheroes Social Skills* program. Scooter is an animated robot enrolled in Jet Pack School that teaches and learns about social skills, such as following directions, with his superhero friends. Fasthands animation and appealing characters were used to engage students in learning skill concepts and applying those skills outside the training environment (Block, 2010; Hood, 2011; Radley, Ford, Battaglia, & McHugh, 2014).

Child Peer-Modeling Video

In addition to the fasthands animation videos, the package included videos of male and female child peer models displaying appropriate behavior. Each video file explicitly taught the child participants the steps to following directions and to

1. Look at the person,
2. Listen to the person when an instruction is being delivered,
3. Nod their head and say “okay”, and
4. Do the instruction right away.

The video outlined the steps and depicted a child peer engaging in the separate behaviors when an instruction was being delivered in various situations and settings.

Each video was approximately 3 minutes in length and included the following jingle embedded within the animation:

(To the tune of "Mama Said" by the Shirelles)

Scooter says, please do as I say

Please do as I say, Scooter said

(Scooter said, Scooter said)

Scooter I will do as you say

I'll say ok and do what Scooter said

When Scooter says, please look at me,

I look, listen, and say… okay, and then I will start

To do just what Scooter says

Once the child and parent finished viewing the video together, the parent repeated the jingle by singing it to the child. The purpose of the parent singing the jingle was to create a priming signal, which the child paired with the transition to the "Scooter Says" game (e.g., compliance session), when the parents delivered requests to initiate child compliance.

Adult Peer-Modeling Videos

The Play Your Way to Compliance program also used adult peer-modeling videos of parents interacting with children as part of the treatment package. The videos were intended to teach parents using peer models that effectively deliver precision requests, ignore inappropriate behaviors, and reinforce compliance. To help parents discriminate when and how to use these skills, peer-modeling videos also included non-

examples of parents who ineffectively deliver precision requests, do not ignore inappropriate behaviors, and use incorrect reinforcement procedures.

For this study, the researcher created three videos per intervention phase, for a total of 12 videos. Each video included an adult peer model providing at least four commands from varying compliance probabilities in different household locations (e.g., kitchen, living room, family room, etc.). Each video clip was approximately 3 minutes long and was divided into three segments. Part one of the video depicted a parent correctly implementing a precision request sequence and gaining child compliance. Part two of the video showed a parent appropriately delivering a precision request sequence and responding to noncompliance. Part three of the video outlined strategies for delivering positive reinforcement. Each video segment outlined the steps for a precision request sequence and introduced each step one at a time. After each step was introduced, a brief video clip displayed a parent performing the specific strategy. Once all steps were introduced, a final video clip exhibited the entire sequence of steps being performed by a parent (Appendix E).

Compliance Probability Checklist

A Compliance Probability Checklist was derived from those used in previous errorless compliance-training studies. The checklist was comprised of a variety of tasks that children might be expected to complete (Ducharme & Drain, 2004; Ducharme & Popynick, 1993; Appendix C). Parent requests were organized into domains that include activities such as playtime, clean up, self-care routines, meal times, and bed times. For each type of request, parents indicated the likelihood, or probability, of their child

complying with the specific request. The rating scale options include *almost always* (76-100%), *usually* (51-75%), *occasionally* (26-50%), and *rarely* (0-25%). Responses to questions were arranged as color categories in a hierarchal order with high probability instructions (76-100%) considered as *green* requests, medium probability instructions (51-75%) as *yellow* requests, low probability instructions (26-50%) as *orange* requests, and extremely low probability instructions (0-25%) as *red* requests.

Compliance Data Sheets

During each compliance session, the researcher and parent participants recorded data on the child's compliance (Appendix G). Each Compliance Data Sheet was color-coded (i.e., green for 76-100%, yellow for 51-75%, orange for 26-50%, and red for 0-25% probability) and listed eight requests. These requests were selected from completed Compliance Probability Checklists. Each request included three opportunities to be delivered. Each color-coded data sheet provided one session of data collection and included a list of pre-determined reinforcers from the Reinforcer Checklist (Appendix D). The data sheet also included social praise statements to be provided during the session. The data sheet included this information as a reminder for parent participants to vary the use of edible and verbal reinforcement.

Reinforcer Checklist

The checklist contained a list of edible reinforcers, ranging from candies to snacks, with room for parents to include specific reinforcers (Appendix D). Edibles were used primarily for their immediate delivery and quick consumption. The Reinforcer

Checklist was created to assist parents in selecting and ranking edible reinforcers to identify what their child may be motivated to earn.

Procedures

Initial permission to conduct the study was obtained from the participating school research review board and the University of Utah Institutional Review Board. Participants in this study were recruited from a wait list at a school that specializes in the treatment of children with autism. Once a list of candidates was identified, a form was sent to the parents or guardians of each child that provided basic information about the study (Appendix A). Parental consent was obtained to observe child participants in order to determine their inclusion in the study.

After parental consent was provided, the researcher conducted three home observations (across several days) for each candidate to observe the child's response to parent requests as they were naturally given in their home. A child was considered a good candidate for the study if his or her compliance rate was observed to be approximately 60% or less across the three observations. The researcher reviewed a parent consent form for inclusion in the study for each child meeting criteria for the study, and included further information and procedures about the study (Appendix A).

Observer Training and Interrater Reliability

The researcher enlisted the help of a graduate research assistant who was enrolled in a doctoral-level school psychology program. The graduate assistant conducted observations and probes throughout the study. In order to ensure interrater agreement, an

observation-training session was held. The researcher reviewed the definitions of compliance and coding instructions with the graduate research assistant. Three observation-training videos were used to practice conducting the observations. Practice observations were repeated until a minimum of .80 interrater reliability was achieved on each video. Cohen's Kappa, which corrects for chance agreement, was used to calculate interrater reliability. The formula for Cohen's Kappa is:

$$k = (Po - Pc) / (1 - Pc)$$

where

Po = the proportion of agreement between observers of occurrence and nonoccurrence of behavior,

and

Pc = the proportion of expected agreement based on chance.

In addition, to estimate the accuracy of coding by the researcher and graduate assistant, point-by-point agreement was calculated to account for disagreements (Yoder & Symons, 2010). According to Yoder and Symons (2010), the formula for Total Percentage Agreement considers observers' agreements on occurrence and non-occurrence of behaviors, as well as disagreements. The formula is

$$[(A + B)/N] \times 100$$

where

A = the instances of agreement between observers of occurrence,

B = the instances of agreement of nonoccurrence of behavior,

and

N = the sum of A + B, plus the instances in which one observer coded a behavior

but the other did not (disagreements).

The point-by-point formula to calculate the total percentage of agreements is the sum of coders' agreements of occurrence and nonoccurrence of behaviors divided by the total number of agreements and disagreements multiplied by 100.

In order to ensure that interrater reliability was maintained throughout the study, a second observer collected observation data for each participant for at least 33% of the observations conducted throughout the study. Observations occurred once during baseline and at least twice during the intervention phase for each study participant. Observational data were collected using the Compliance Data Sheets.

Introductory Orientation

The researcher completed the orientation meeting with the parent in the home environment. During this session, parents were taught about the cycle of coercion and the importance of compliance training. Parents were acquainted with the requirements as well as the components of the Play Your Way to Compliance program. Each parent participant completed the Compliance Probability Checklist and the Reinforcer Checklist. Parents were also completed the CBCL and PSI-4 rating scales.

Agenda for Introductory Session

1. Researcher explained program requirements.
2. Researcher explained PYWTC program procedures.
3. Parents completed Compliance Probability Checklist.
4. Parents completed Reinforcer Checklist.

5. Parents completed CBCL and PSI-4.

Baseline

At least three baseline data probes were collected for each participant using a frequency-recording format. Three baseline sessions were collected across 3 days for Participants 1 and 3. Four baseline sessions were conducted across 4 days with Participant 2. An additional baseline session was conducted with Participant 2 in order to obtain stable baseline rates of compliance.

Parents were instructed to deliver requests generated from the Compliance Data Sheet. The Compliance Data Sheet included specific requests for parents to deliver. Parents were instructed to deliver the requests as they would naturally. No direct instruction on how to effectively deliver requests and how to effectively respond to compliant or noncompliant behaviors was provided. Eight specific requests were selected from the Compliance Probability Checklists for each probability level (e.g., 0-25%; 26-50%, etc.). Parents delivered four randomly selected requests from each category (green, yellow, orange, and red) per baseline session. Each request was given three times for a total of 24 trials per baseline observation.

Treatment

Parent Training Session: In-Home Compliance Training

The parent training was conducted in one session and was divided into two training sections: Part One focused on the researcher providing direct instruction and Part Two focused on the parents practicing skills.

Part One – Direct Instruction of Precision Requests

The first portion of training was focused on direct instruction of effective delivery of precision commands and effective reinforcement (Figure 1). The researcher trained parents in their respective home environments utilizing the materials (e.g., adult peer-modeling videos) from the Play Your Way to Compliance program. The session reviewed definitions for compliance and effective delivery. The following procedures were taught to parents: 1) delivering a precision request sequence, 2) responding to child compliance with positive reinforcement, and 3) ignoring noncompliance.

Parents were taught the following steps to a precision request sequence:

1. *Gain the child's attention.* Be within 3-5 feet. Say the child's name. Use a neutral voice.
2. *Deliver an appropriate "please" request.* State the behavior you want. Keep instructions simple. Use a neutral voice.
3. *Allow time for the child to respond.* Give the child 5 seconds to initiate compliant behavior.
4. *If child is compliant, provide immediate reinforcement.* Deliver a reinforcer that corresponds to the color of the request or higher.
5. *If child is noncompliant, ignore behavior and deliver an appropriate "need" request.* State the behavior you want. Keep instructions simple. Use a neutral voice.

Parents also observed an adult peer-modeling video in which an adult peer was shown to deliver effective and ineffective requests. The 2-minute video included each step of the precision request sequence.

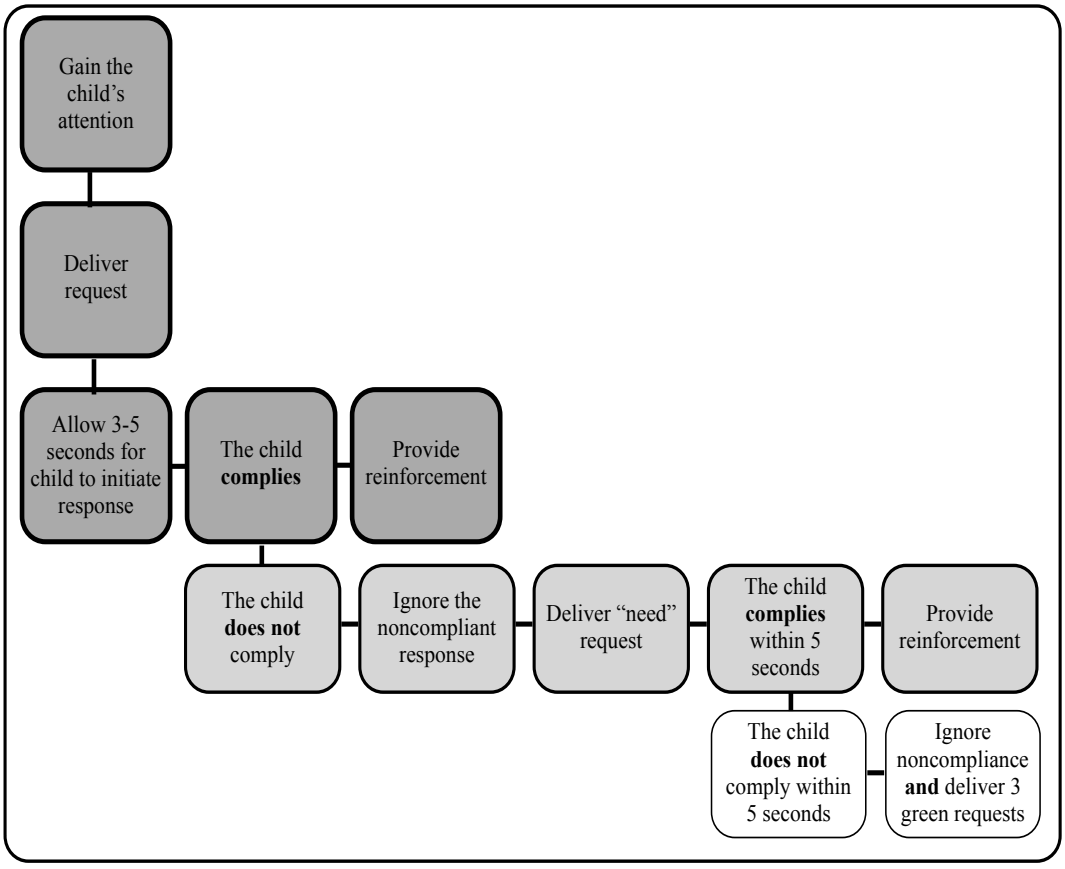

Figure 1. The precision request sequence.

Part One – Direct Instruction of Reinforcement.

For effective delivery of reinforcement, parents were taught to use a procedure called IFEED-AV as described below. Parents learned the following IFEED-AV strategies for reinforcement (Rhode, Jenson, & Hepworth-Neville, 2010) and used the following steps to deliver reinforcement:

I - *Immediate.* Provide reinforcement immediately.

F - *Frequent.* Provide reinforcement frequently.

E - *Enthusiasm.* Be enthusiastic when delivering praise and reinforcement.

E - *Eye Contact.* Make eye contact with the child.

D - *Describe.* Describe the appropriate and positive behavior.

A - *Anticipation*. Create anticipation and excitement to motivate the child.

V - *Variety.* Vary reinforcers to maintain motivation.

The steps for IFEED-AV were provided to parents along with a list of potential edible reinforcers and praise statements. The reinforcement list was provided directly on the Compliance Data Sheet. Parents also observed an adult peer-modeling video in which an adult peer was shown to deliver effective and ineffective reinforcement. The video depicted each IFEED-AV strategy and was approximately 2 minutes in duration.

During each treatment phase, parents were instructed to deliver reinforcement and praise statements at differing schedules. During treatment phases one through four, parents provided edibles and social praise statements on a continuous schedule of reinforcement. For example, after each compliant response, parents delivered both an edible reinforcer and a social praise statement to their child.

Part One – Direct Instruction of Extinction

Parents were taught to use extinction procedures when their child engaged in noncompliant behavior. Parents were instructed to ignore their child if he or she was engaging in behaviors such as whining, crying, screaming, or talking back after an instruction was delivered. The steps for ignoring behavior proposed by Jenson, Rhode, and Hepworth (2010, p. 45) were presented to the parents:

1. *Break eye contact.* Turn your head, turn around, or leave the room if necessary.
2. *Show no emotion.* Use stony silence.
3. *Ignore by engaging in another activity or paying attention to someone else.*

4. *Do not give in!* Remember to expect the behavior to worsen before it gets better. If you give in your child might learn that when he or she acts bad enough for long enough you will relent.
5. *Beware of bootleg reinforcement!* If the response you are ignoring is not decreasing, others might be maintaining it.
6. *Resist the urge to nag.* For most children nagging will actually strengthen the undesirable behavior.

Parents also observed an adult peer-modeling video in which an adult peer was shown to effectively and ineffectively use extinction procedures. The video depicted, in detail, each step to ignoring problem behaviors and was approximately 2 minutes in duration.

Part Two – Parent Practice

The purpose of Part Two of the in-home parent training session was for parents to rehearse and apply the skills learned from Part One with the researcher (Figure 2). The parents were also required to demonstrate the procedures needed to complete a compliance session using the researcher as the practice subject. In order for parents to practice the procedures, the facilitators used modeling, role-playing, behavioral coaching, and feedback. The facilitator practiced and modeled each procedural step and provided feedback to parents while they practiced. The facilitator provided instruction until parent participants demonstrated at least 80% of the steps independently to complete the parent training session. All rehearsals used the researcher or other caregiver as the practice participant. The remainder of the session reviewed procedural steps and instructions for Parents to play the fasthands animation for their children and to view modeling videos

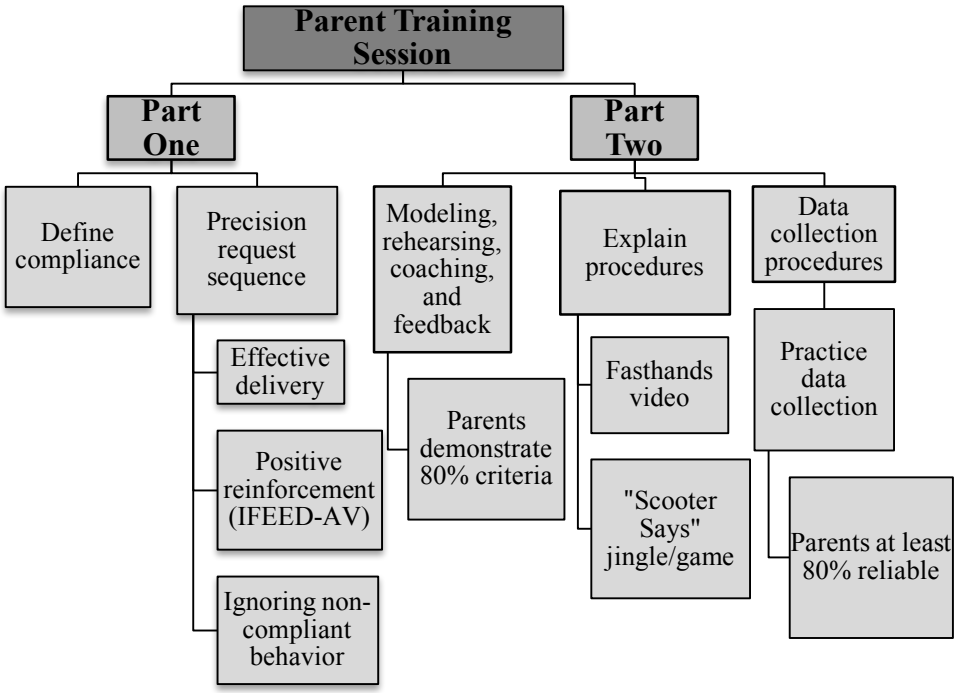

Figure 2. Parent training session procedures.

before beginning a compliance session with their children. The "Scooter Says" jingle was taught to parents. Parents were also instructed on strategies to initiate a simple and fun game of "Scooter Says" (i.e., a game of "Simon Says") before beginning a compliance session. Parents were then instructed to begin delivering requests as selected from the Compliance Probability Checklist.

To conclude the session, parents were given instructions for data collection procedures and how to appropriately record responses onto the data sheet. Parents were shown several video clip examples of a parent-child interaction to observe and practice collecting data until they were able to independently record data with 80% reliability with the researcher.

Treatment: In-Home Compliance Sessions

At least three compliance sessions were conducted in the home setting. One session per week was conducted with the researcher observing (in-home or telepresence), and the remaining two sessions were conducted by the parent independently.

Treatment Phase One: Compliance Sessions

After parent training was completed, parents began training sessions with their child and were expected to complete two sessions per week independently. These sessions were held in the same predetermined room that met the criteria for an optimal learning environment (i.e., television turned off, separation from siblings, etc.). Parents were instructed to conduct compliance sessions until the child had demonstrated at least 80% compliance for green requests across two consecutive sessions (i.e., green, yellow, orange, red). Once the criterion was met, the participants entered the following treatment phase and moved on to the next requests in the hierarchy (Figure 3).

Researcher Present-Session

The researcher was present (either in-home or via telepresence) for one session each week to provide support and feedback. When the treatment phase began, the researcher was physically present to observe compliance sessions in each of the participants' homes. The researcher then transitioned from being physically present to observe compliance sessions to using telepresence to observe compliance sessions.

The researcher was physically present to observe four compliance sessions with Participant 1 and seven compliance sessions via telepresence. The researcher was

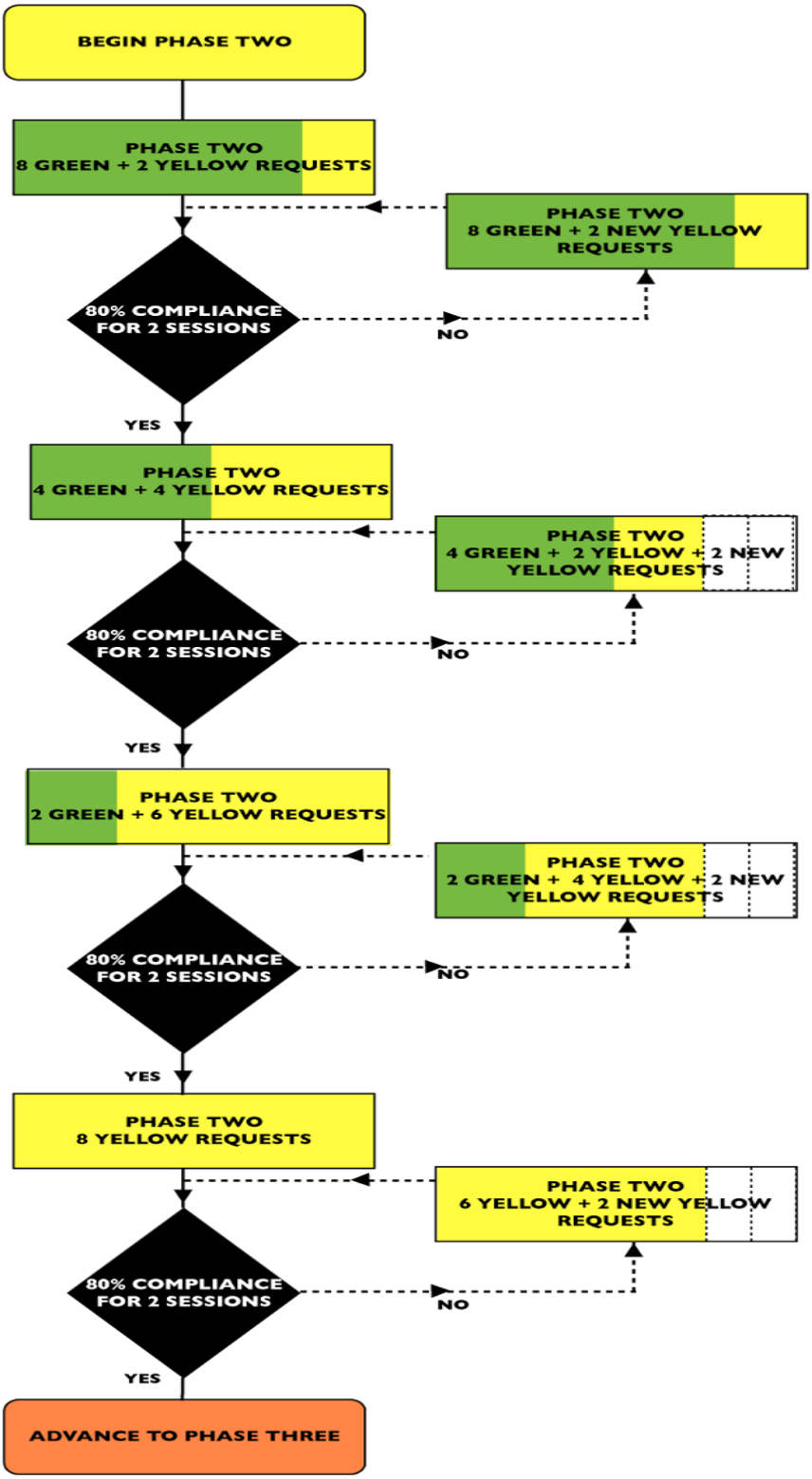

Figure 3. Treatment: Phase change procedure.

physically present to observe three compliance sessions and observed nine compliance sessions via telepresence for Participant 2. The researcher was physically present to observe three compliance sessions and observed eight compliance sessions via telepresence for Participant 3. One additional compliance session was conducted with Participant 2 to obtain 80% compliance during the green treatment phase.

When the researcher observed a session (physically present or using telepresence), parents were instructed to watch adult peer-modeling videos before initiating the compliance session with their child. The parents had the opportunity to review implementation steps for the compliance sessions and observed successful implementation of the precision request sequence. Once the adult peer-modeling video was complete, the parent prompted the child to watch the fasthands animation video. The parent watched the video along with the child. To initiate the start of a compliance session, parents began singing the "Scooter Says" jingle and engaged in a game of "Scooter Says" and provided fun opportunities for child compliance (e.g., "Dance like a chicken"; "Make a silly face") before delivering requests.

Parents referenced their Compliance Data Sheets, which included a list of requests to be given during a compliance session. After each delivery of a request, the parent recorded all child responses on the Compliance Data Sheet, and the researcher simultaneously collected data when observing (physically present/telepresence). Once parents had delivered all instructions, the researcher provided feedback on their delivery of the precision request sequence, delivery of positive reinforcement for child compliance, and ignoring of inappropriate behaviors during noncompliance.

Independent Parent Session

During treatment Phase One, parents delivered only green requests that were expected to elicit high rates of child compliance. Requests were predetermined from the Compliance Probability Checklist. Eight green requests were delivered during each compliance session. Parents completed three trials of each request per session. However, the same requests were not repeated consecutively. Session times varied depending on child compliance or behaviors. Once the child had demonstrated 80% compliance across three consecutive sessions for the green requests, the participants entered treatment Phases Two, during which green requests were interspersed with the delivery of yellow requests (Figure 4).

Treatment Phases Two, Three, and Four

Treatment procedures for Phases Two, Three, and Four were identical to treatment Phase One with the exception of the types of requests that were delivered. To begin treatment Phase Two, parents introduced only two yellow requests at a time in addition to the eight green requests for a total of 10 requests. If the child did not demonstrate 80% compliance with the set of new yellow requests after two consecutive sessions, parents were instructed to deliver a set of two different yellow requests. Once the child had demonstrated 80% compliance with a set of yellow requests across two sessions, an additional set of two yellow requests were delivered until all yellow requests were completed (8 yellow requests in total). After each participant met compliance criteria for 8 yellow requests, child participants were transitioned into treatment Phase Three.

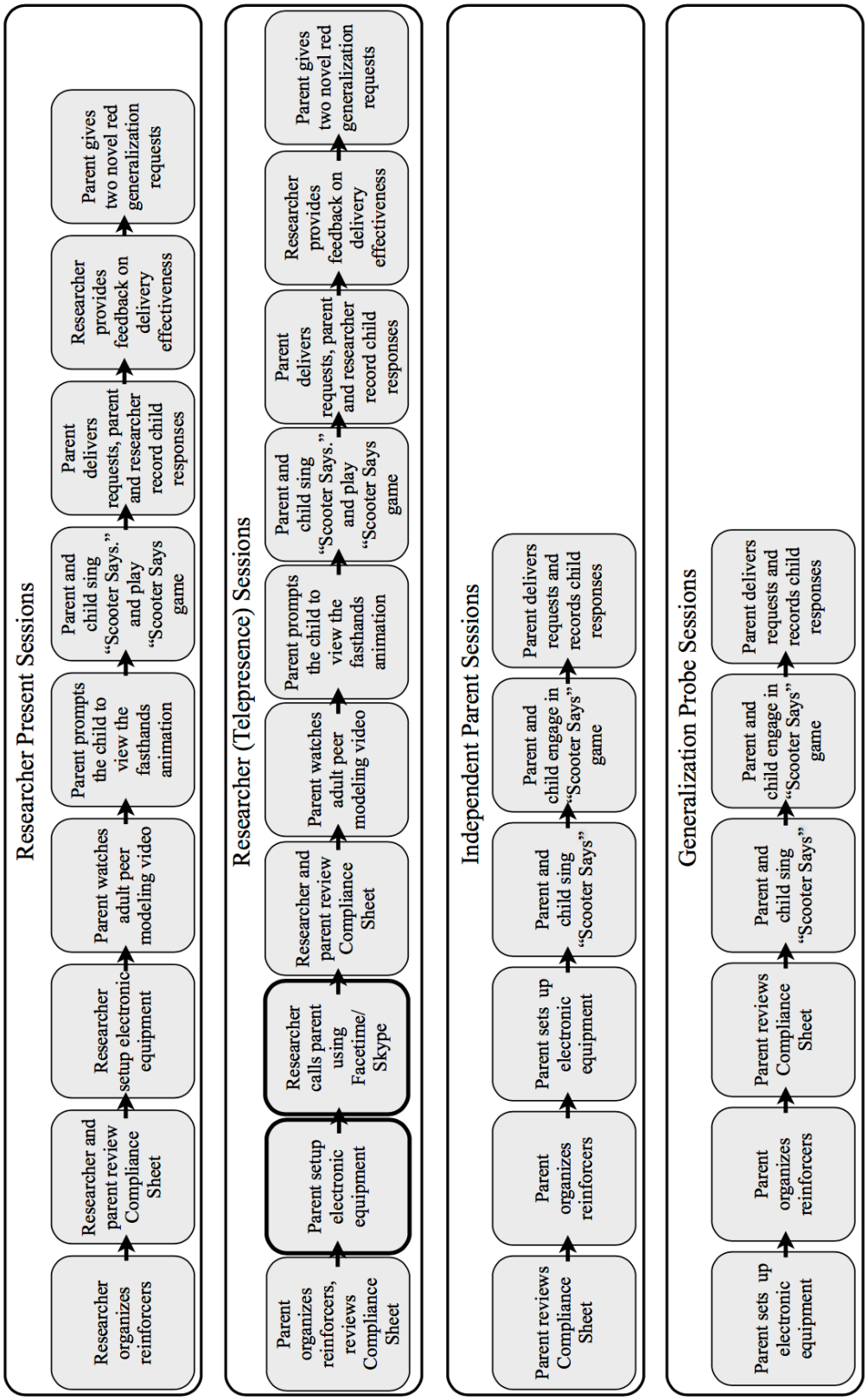

Figure 4. Sequence of compliance and generalization sessions.

Beginning in treatment Phase Three, parents delivered orange requests that were introduced two at a time. Parents continued to deliver eight yellow requests while adding two orange requests during the initial Phase Three sessions. During treatment Phase Three, if a child participant met the criterion for compliance, two orange requests were added to a session, while subsequently removing two yellow requests, for a total of eight requests per session. If a child did not meet the criterion with a set of orange requests after two consecutive sessions, parents were provided two new orange requests from the Compliance Probability Sheet. Once the child demonstrated 80% compliance with the eight orange requests, parents were instructed to move onto treatment Phase Four, delivering red requests.

Treatment Phase Four (red treatment phase) was identical to the previous phases; parent participants introduced red requests two at a time, initially delivering eight orange requests and two red requests at the beginning of treatment Phase Four. As described in treatment Phase Three, orange requests were replaced with red requests, two at a time until all eight red requests were given during compliance sessions. Parents continued to use a continuous schedule of reinforcement during compliance sessions. The red requests that were given during this phase were the same red requests that were given during baseline compliance sessions.

Maintenance Treatment Phase

Once the child participant demonstrated 80% compliance across two sessions with red requests, the maintenance treatment phase began. During this phase, compliance sessions were conducted by using a variable schedule of edible reinforcers. Edible

reinforcers were faded from a continuous schedule of reinforcement to a variable ratio schedule of 50%, a variable ratio of 25%, and a variable ratio of 0%. To accomplish fading edible reinforcers, the researcher determined a random schedule of reinforcement and labeled the parent's Compliance Data Sheet with an asterisk sign next to randomly selected reinforcement trials. The asterisk indicated to the parent an edible reinforcement needed to be given following a child's compliant response to a particular request. Parents began the fading procedures by first fading to a variable ratio of 50%. Child participants were given an edible reinforcer for an average of 50% of their compliant responses. If the child demonstrated 80% compliance with the initial fading session, the following session was conducted with a variable ratio schedule of 25%. During this session, child participants were reinforced with an edible for an average of 25% of their compliant responses. Parents continued to provide praise statements on a continuous schedule of reinforcement. During the final maintenance compliance session, parents prompted their children before the session began that they would not be obtaining "treats." If the child participants requested a treat using gestures or verbal requests, parents were instructed to ignore their subsequent requests for edibles. The maintenance treatment phase was completed after a participant was 80% compliant with red requests while receiving no edible reinforcers.

Generalization Probes: Following Compliance Sessions

Each parent completed the Compliance Checklist to identify a pool of red requests. From the pool of requests, the researcher randomly selected eight novel red requests for each participant that would be used for generalization probes. These novel

requests were separate from the requests selected for the red treatment phase of the study. Red requests were a primary focus of this study because children showed the least compliance with these requests during baseline. The researcher probed for changes in the rates of compliance with novel red requests across the course of the study to measure generalization.

There were two opportunities each week when parents were asked to provide generalization probes. One opportunity occurred after a child completed a compliance session. The second opportunity was a generalization probe session, conducted at the end of each week. The first opportunity to conduct generalization probes occurred immediately following a compliance session when the researcher was observing (physically present or via telepresence). The researcher provided the parent with two red requests per session to deliver. The researcher recorded the child participant's compliance with the generalization probes. The researcher recorded all compliance data using the Compliance and Generalization Datasheets (Appendix G).

Weekly Generalization Probe Sessions Conducted via Telepresence

At the end of each week, a generalization probe session was conducted. The researcher randomly selected two of the eight probes for each generalization probe session. The researcher contacted parents via Facetime or Skype to conduct the sessions (Appendix J: Script). During the generalization probe sessions, the researcher did not provide performance feedback to the parent in their delivery of the precision request sequence. If the parent had questions or concerns, the researcher addressed them during the next compliance session. The researcher recorded all compliance data using the

Compliance and Generalization Data sheets (Appendix G).

Post Intervention

On the last day of the maintenance treatment phase, the researcher collected feedback from the child participants on their perceptions of this study. The researcher worked with the child participants via telepresence to complete the Child Intervention Rating Scale (Appendix I). Parents were mailed a Parent Intervention Rating Scale to complete independently, which they completed and mailed to the researcher. Parents were able to discuss any concerns they had with the study, what components they liked or disliked, and how the program could be improved. Parents were also mailed the CBCL and the PSI-4 to complete and all forms were collected via postal mail.

Follow-up

Three weeks after each participant completed treatment, a follow-up session was conducted via telepresence and was recorded. During this visit, the researcher obtained data on the parent's delivery of requests and the rates of compliance demonstrated by the child using the Fidelity Checklist and Compliance Data Sheet. Compliance rates were collected for red probability requests. Because red requests elicited the lowest compliance rates from the child at the outset of the study, parent participants delivered only red requests in order to evaluate the effectiveness of the program. The parent delivered a total of eight requests. Each request was given at least three times, but was not presented consecutively. Parents used a continuous schedule of reinforcement for verbal praise statements but no edible reinforcers were provided for compliant responses.

Data Analysis

Compliance Rates

Compliance rates were collected via systematic direct observation in the participants' homes using event recording. Percent compliance was calculated by dividing the number of times the child complied by the total number of instructions presented and multiplying by 100. Data were plotted to allow visual analysis of any patterns in the difference between each participant's baseline compliance rates and the compliance rates during the intervention and follow-up phases. Historically, visual analysis has been the primary method of data analysis for single-subject research (Aaronson & Baer, 1992; Barlow & Hersen, 1984). Visual analysis is completed by assessing data based on change in the level, trend, and variability of data from baseline to treatment (Riley-Tilman & Burns, 2009). Visual analysis has been a preferred method to evaluate treatment effects, although the use of visual analysis can sometimes lead to subjective conclusions when data are not clear. Therefore, it can be helpful to supplement visual analysis with statistical analyses (Kazdin, 1982).

Effect Size

The "no assumptions" approach by Busk and Serlin (1992) was used to calculate an effect size for each participant. Using this model, a separate effect size was obtained for each participant, by dividing the difference in means during baseline and intervention by the baseline standard deviation. The formula used is as follows:

[Mean of Intervention – Mean of Baseline] / Standard Deviation of Baseline

Using the conventional standards for interpreting effect size, as defined by Cohen (1998), an effect size of 0.2 would be considered a small treatment effect, 0.5 would be a medium effect, and an effect size of 0.8 or above would be considered a large treatment effect.

Percentage of Nonoverlapping Data

The Percentage of Nonoverlapping Data (PND) scores were calculated for each child participant in order to provide further information concerning the effectiveness of the intervention. Olive and Smith (2005) describe a method for calculating PND scores for studies that focus on increasing target behaviors. The first step is to identify the highest data point within the baseline phase. Next, the number of data points observed to be above this baseline data point is calculated. Finally, the number of treatment data points above the highest baseline data point is divided by the total number of data points. PND scores below 50 are regarded as ineffective treatment; scores of 70 to 90 are considered questionable, and PND scores over 90 are deemed very effective (Scruggs & Mastropieri, 1998).

Nonoverlap of All Pairs

Nonoverlap of All Pairs (NAP) scores were also calculated for each child participant in order to provide additional information regarding the effectiveness of the intervention. Parker and Vannest (2009) have described the method for calculating NAP scores for studies that focus on increasing target behaviors. They define NAP as “the probability that a score drawn at random from a treatment phase will exceed (overlap)

that of a score drawn at random from a baseline phase" (p. 359). NAP has shown superior external validation against visual analyst judgment and computational efficiency and accuracy when compared to other overlap-based effect size measures in single-case research such as "Percent of All Nonoverlapping Data" (PAND), "Percent of Overlapping Data" (PND), and "Percent of Data Points Exceeding the Median" (PEM).

The first step to calculate NAP is to identify all overlapping pairs between the baseline and intervention phases. The total possible pairs are the number of data points in the baseline phase multiplied by the number of data points in the intervention phase. An overlap between a baseline and intervention point counts as one point and a tie counts as half a point. All overlapping baseline points are compared to all intervention points to achieve a total score. This score is subtracted from the total possible pairs. To achieve a probability score, the resulting number is divided by the total possible pairs. Parker and Vannest (2009) report that scores in the ranges of .93 – 1.0 suggest strong intervention effects. A score between .32 - .84 suggests medium intervention effects and 0 -.31 suggests weak intervention effects.

Externalizing Problems

The researcher analyzed pre- and posttreatment scores on the Externalizing Problems scale on the Child Behavior Checklist (CBCL). The scores were reported as *T*-scores, and the mean difference between pre- and posttest scores was analyzed for each child participant and for child participants overall to determine treatment effects.

Parenting Stress

The researcher analyzed pre- and posttreatment scores on the Parenting Stress Index to determine the effectiveness of the intervention on parent stress. The Parenting Stress Index relies upon percentiles as the primary interpretive framework (Abdin, 2012). Therefore, scores were reported as percentiles, and the mean difference between pre- and posttest scores was analyzed for each parent participant.

CHAPTER 3

RESULTS

This study was designed to evaluate the effectives of the Play Your Way to Compliance program with preschool aged children on the autism spectrum who engaged in high rates of noncompliance. The purpose of this program was to teach parents skills to effectively increase child compliance using a single parent training session. This study sought to use research validated strategies and incorporate them into the Play Your Way to Compliance Program. More specifically, this program included the techniques of errorless learning, precision requests, behavior momentum, and video modeling. The program's effectiveness was evaluated using both direct and indirect methods of data collection. Direct methods included conducting observations of each participant. The main focus of this study was obtaining the rates of child compliance with red requests, which were the most difficult requests for a child to complete (i.e., the child engaged in high rates of noncompliance during baseline). Direct observations were also obtained during generalization probe sessions using novel red requests. The participants' compliance rates with novel red requests were evaluated to determine the degree of generalization that occurred across the course of the study. Direct observations of the program's effectiveness were also evaluated by obtaining data on participants' compliance rates 3 weeks after the treatment sessions concluded. Indirect methods of

data collection included the Parenting Stress Index-Fourth Edition (PSI-4), the Child. Behavior Checklist (CBCL), and a modified Behavior Intervention Rating Scale (BIRS). For each participant, pretreatment and posttreatment ratings were obtained on the PSI-4 and the CBCL to assess if aspects of parenting stress or child characteristics changed after participating in the Play Your Way to Compliance Program.

Four participants were recruited to participate in this study. One participant dropped out of the study; therefore the results include only the remaining three participants. The participant who dropped out of the study completed each phase of treatment (green through red) but dropped out during the maintenance treatment phase. The parent reported that the child engaged in high rates of compliance and felt that noncompliance was no longer a substantial issue for the child.

Reliability of Observations

Interrater reliability was obtained to measure the consistency between observer ratings. If high reliability between observers occurs, it is likely to minimize biases and indicate that the target behavior, in this case compliance, is well defined for both observers. According to Forehand and McMahon (1981), separate raters should be 80% reliable. For this reason, a graduate research assistant obtained 80% reliability with the primary researcher prior to the start of this study.

Reliability was calculated based on the observed compliance sessions recorded by the researcher. The researcher observed an average of 11 compliance sessions across the treatment phases of the study.

The graduate research assistant obtained reliability with the researcher based on

the compliance sessions recorded by the researcher. The graduate research assistant coded between 60-66% of the same videos the researcher coded. Interobserver agreement was obtained, resulting in 66% of observations for Participants 1 and 3, and 60% of observations for Participant 2. Agreements were coded as a child's compliant response as observed by both the primary researcher and graduate research assistant. Disagreements were calculated when just one observer coded a compliant response. Overall reliability was calculated to be 96%.

Kappa was also calculated to determine reliability. Kappa includes calculations using both occurrences and nonoccurrence of behaviors, making it a useful tool to capture reliability (Sattler, 2006). Kappa identifies the proportion of observer agreements and corrects for chance agreements. For the current study, Kappa was .94. According to guidelines set forth, Cohen's kappa coefficient values of less than .40 are considered *poor*. If they fall between .40-.59 they are considered *fair*, between .60 and .74 *good*, and *excellent* if between .75- and 1.0. Based on the interpretive guidelines, the coefficient data collected during this study indicate a substantial level of observer agreement. Based on the high level of interrater agreement as well as a substantial level of agreement using Kappa, the findings from this study can be considered reliable and interpretable.

Research Question 1

Will child compliance rates be higher than baseline compliance rates after receiving the Play Your Way to Compliance program as measured by direct observation?

During each baseline session, parents were instructed to provide requests to the child in their usual fashion. Baseline sessions included four requests per session from

each of the color-coded hierarchy (green, yellow, orange, red), for a total of 24 trials. The color-coded requests were given in a random order during baseline sessions. The requests were selected based on the Compliance Checklist each parent completed prior to baseline observations. Each baseline compliance session was conducted in the participant's home setting. The researcher was physically present in each of the participant's home settings and videotaped each session. The researcher then coded the session for compliance using the Compliance Data Sheets (Appendix G). The compliance sessions were measured by recording the frequency of compliant responses the child participants demonstrated, divided by the number of total parent requests given and multiplying by 100, resulting in percent compliance for each session. The frequency of responses (compliant and noncompliant) was calculated during the baseline and treatment phases.

All Participants

Baseline compliance rates using the child participants' responses to red requests were compared to their compliance rates with requests during the red treatment phase and are the primary focus of analysis (Table 4). All participants demonstrated low rates of compliance with red requests during baseline observation sessions. They engaged in an average of 15.5% compliance with red requests during baseline observation sessions. At the conclusion of the red treatment phase, the participants averaged 98% compliance with the same red requests provided during baseline observation sessions, which represents a substantial increase in compliance rates for all participants from baseline to treatment.

The data from these observations were used to calculate the magnitude of change (ES), percentage of nonoverlapping data points (PND), and the nonoverlap of all pairs.

Table 4. Participant Treatment Results

	Group	Participant 1	Participant 2	Participant 3
BS Effect Size	5.2	13.6	4.4	3.1
NAP	1	1	1	1
PND	100%	100%	100%	100%

Calculations of group effect sizes were completed using the Busk and Serlin (1992) no assumptions model. A large group effect was found for compliance when comparing compliance with red requests at baseline to compliance with red requests during the treatment phase (ES = 5.2). These results indicate that the Play Your Way to Compliance Program package was effective at increasing the compliance rates from baseline to the treatment phases. A summary of participants' results is presented in Table 4. The average percentage of nonoverlapping data was calculated to be 100%. The average probability of nonoverlap of all pairs (NAP) was calculated to be 1.0. These scores indicate that the treatment package was highly effective at increasing the participants' compliance rates (Scruggs et al., 1986). The mean baseline compliance rates for all participants were 62.3% for green requests. The mean compliance rate during the green treatment phase was 91.9%.

The mean baseline compliance rate with yellow requests for all participants was 46.2%. The mean compliance rate with yellow requests was 97.6% during the yellow treatment phase. The mean baseline compliance rate for all participants was 30.5% with orange requests. The mean compliance rate with orange requests was 96.6% during the orange treatment phase (Appendix F).

Participant 1

Participant 1's mean compliance rate with red requests during baseline observations was 3%. Participant 1's mean compliance rate with red requests during the red treatment phase was 100%, a 97% increase in compliance rates with red requests from baseline to treatment. The Busk and Serlin metric for judging effect sizes indicated that large positive effect sizes were observed (ES = 13.6). The PND was calculated at 100% and the NAP was 1.0.This indicates that there was a large change in Participant 1's compliance between baseline and treatment. In addition, no data points overlapped between the baseline and treatment phases.

Participant 1's mean compliance rate with green requests during baseline was 81%. During the green treatment phase, Participant 1 had an average compliance rate of 97.3% with green requests. Participant 1's mean compliance rate with yellow requests during baseline was 29%. During the yellow treatment phase, Participant 1's average rate of compliance was 100% with yellow requests. Participant 1's mean compliance rate with orange requests during baseline was 17.6%. During the orange treatment phase, Participant 1 had an average compliance rate of 100% with orange requests (Figure 5).

Participant 2

Participant 2's mean compliance rate with red requests during baseline observations was 16%. During the red treatment phase, Participant 2's mean compliance rate was 96% with red requests, an 80% increase in compliance rates with red requests from baseline to treatment. Using the Busk and Serlin metric for judging effect sizes,

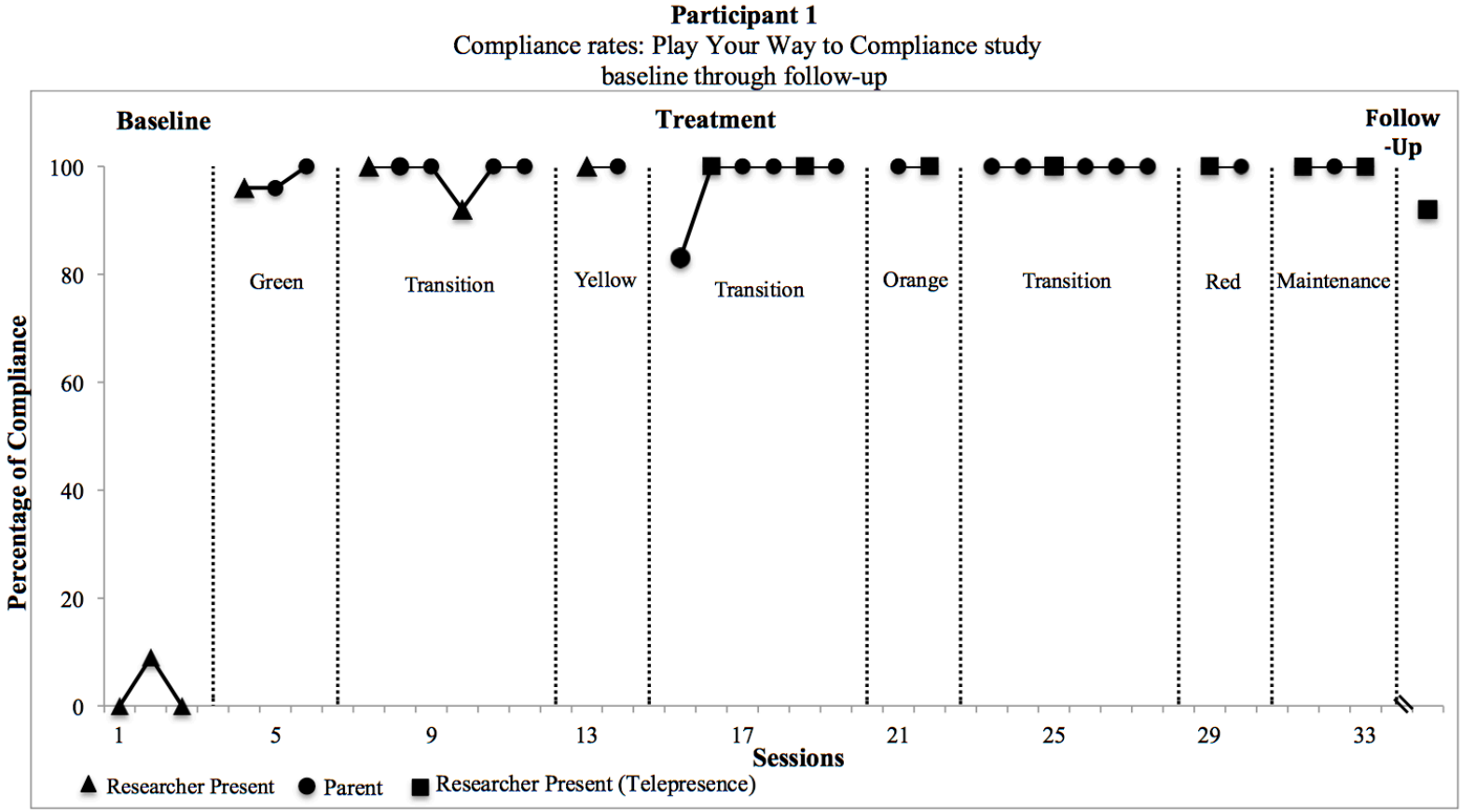

Figure 5.Percentage of compliance to parent requests for participant 1. Data points in baseline represent child compliance to red requests. Follow-up data point represents compliance with red requests.

large positive effect sizes were observed (ES = 4.4). The PND score was calculated to be 100% and the NAP score was 1.0. Based on the effect size, PND, and NAP scores, there was a large change in Participant 2's compliance rates with red requests between baseline and treatment.

Participant 2's mean compliance with green requests during baseline was 52%. During the green treatment phase, Participant 2 was compliant with green requests for an average of 83%. Participant 2's mean compliance rate with yellow requests during baseline was 52%. During the yellow treatment phase, Participant 2 engaged in an average of 93% compliance with yellow requests. Participant 2's mean compliance rate with orange requests during baseline was 38.7%. During the orange treatment phase, Participant 2 had an average compliance rate of 90% with orange requests (Figure 6).

Participant 3

Participant 3's mean compliance rate with red requests during baseline was 28%. During the red treatment phase, Participant 3 had a mean compliance rate of 98% with red requests. There was a 70% increase in compliance rates with red requests from baseline to treatment. Using the Busk and Serlin metric for judging effect sizes, large positive effect sizes were observed (ES = 3.1). Participant 3's PND score was calculated to be 100% and the NAP score was calculated to be 1.0. Based on the effect size, PND, and NAP scores, there was a large change in Participant 3's compliance rates with red requests between baseline and treatment.

Participant 3's mean compliance with green requests during baseline was 57%. During the green treatment phase, Participant 3's mean compliance to green requests was

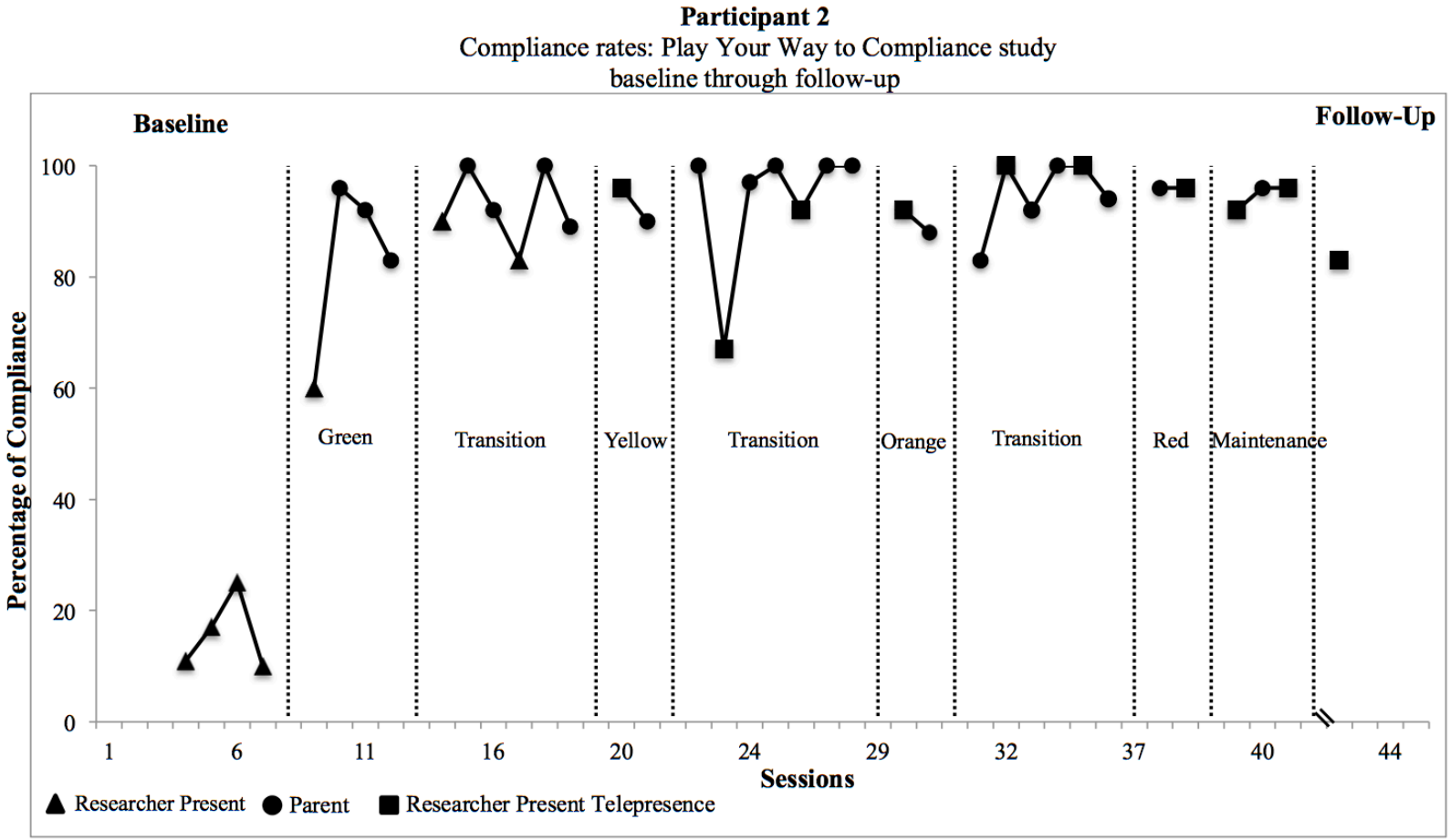

Figure 6. Percentage of compliance to parent requests for participant 2. Data points in baseline represent child compliance to red requests. Follow-up data point represents compliance with red requests

99%. Participant 3's mean compliance rate with yellow requests during baseline was 55%. During the yellow treatment phase, Participant 3's mean compliance rate was 100% with yellow requests. Participant 3's mean compliance rate with orange requests during baseline was 32.1%. During the orange treatment phase, Participant 3 had a mean compliance rate of 100% with orange requests (Figure 7).

When compared to baseline, the data show that each participant demonstrated an immediate increase in compliance at the outset of the study. The data indicated that participants engaged in higher rates of compliance across all treatment phases over baseline compliance rates. Using the no assumptions Busk and Serlin (1992) effect size calculation, there were large effects for all participants. The percentage of nonoverlapping data (PND) score for all participants indicates that the treatment package was highly effective in increasing compliance rates while the nonoverlap of all pairs (NAP) score for all participants indicates that the intervention package had large effects in increasing compliance rates of the participants in the study (Parker & Vannest, 2009; Scruggs et al., 1986). The individual participant effect sizes were large for Participant 1 (ES 13.6), Participant 2 (ES 4.4), and Participant 3 (ES 3.1). The PND and NAP scores were calculated to be 100% and 1.0, indicating a substantial change in the rates of compliance for each participant. Although the results of the participants' compliance rates were strong, attrition of one participant limits the sample size, weakening the strength of conclusions. These results indicate that The PYWTC program was effective at increasing participant's compliance rates with red requests. There was sufficient information to answer this research question. To recap, the data showed that each participant demonstrated an immediate increase in compliance at the outset of the study.

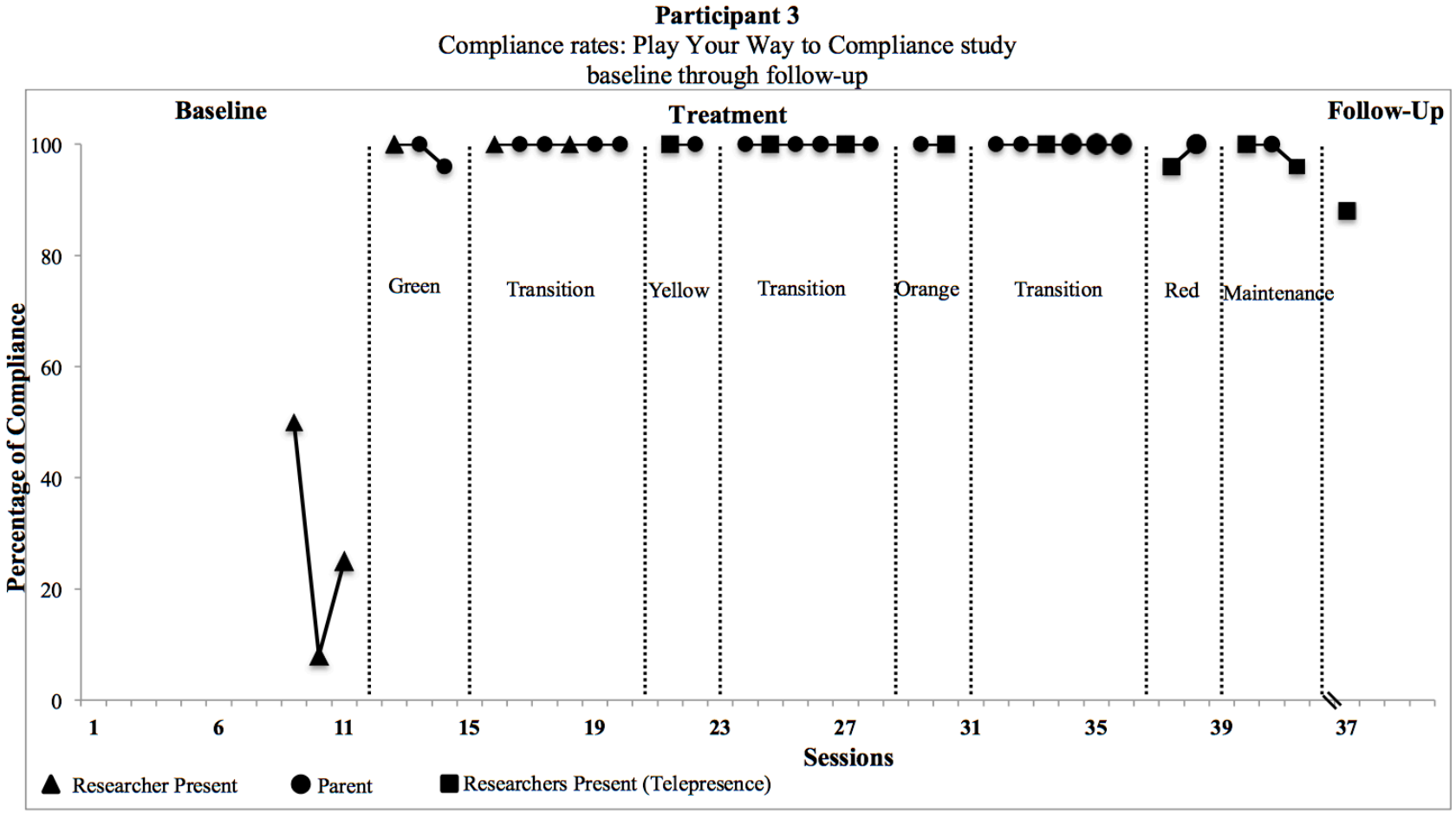

Figure 7. Percentage of compliance to parent requests for participant 3. Data points in baseline represent child compliance to red requests. Follow-up data point represents compliance with red requests.

Research Question 2

Will child compliance rates to novel low probability red probes increase across the duration of the study?

After parents completed the Compliance Checklist, the researcher selected eight novel red probes to be used for generalization across all treatment phases of the study. The eight novel red probes were different from the red requests used during compliance sessions. There were two opportunities each week when parents were asked to provide novel red probes. The first opportunity to give novel red probes occurred at the end of a compliance session when the researcher was observing. The second opportunity occurred during a generalization session, which occurred at the end of each week and was conducted only via telepresence (Appendix J).

All Participants

Due to the participants' low rates of compliance with red requests during baseline sessions, it was assumed that participants would also engage in low rates of compliance with novel red probes. The average rate of compliance for all participants with novel red probes was 88% across all treatment phases (Table 5).

Participant 1

Participant 1 had an average of 98% compliance with novel red probes across all treatment phases. Participant 1 had a mean rate of 100% compliance with novel red probes during the green treatment phase and an average 100% compliance rate with novel red probes during the yellow treatment phase. During the orange treatment phase, this

Table 5. Generalization Probes: Participant's Average Compliance Rates With Novel Red Requests

Participants	Green	Transition	Yellow	Transition	Orange	Transition	Red	Maintenance
1	**100%**	96%	**100%**	94%	**100%**	94%	**100%**	100%
2	**34%**	61%	**67%**	83%	**100%**	71%	**92%**	92%
3	**100%**	72%	**84%**	96%	**100%**	94%	**100%**	100%
Average	**78%**	76%	**84%**	91%	**100%**	86%	**97%**	97%

participant had a mean compliance rate of 100% with novel red probes, and during the red treatment phase, an average of 100% compliance rates with novel red probes. During the maintenance treatment phase, Participant 1 had a mean compliance rate of 100% with novel red probes. During the transition treatment phases (fading from green to yellow, yellow to orange, and orange to red), Participant 1's average compliance rate was 95% with novel red generalization probes (Table 5).

Participant 2

Participant 2 engaged in an average of 73% compliance with novel red probes across all phases of treatment. During the green treatment phase, Participant 2 had a mean compliance rate of 34% with novel red probes. During the yellow treatment phase, Participant 2 engaged in an average rate of 67% compliance with novel red probes. During the orange treatment phase, Participant 2's mean compliance rate with novel red probes was 100%.

Participant 2 engaged in an average of 92% compliance rates with novel red probes during the red treatment phase. During the maintenance treatment phase, Participant 2 engaged in an average of 92% compliance with novel red probes (Table 5). During the transition treatment phases (fading from green to yellow, fading from yellow to orange, and fading from orange to red), Participant 2 had a mean compliance rate of 72% with novel red probes.

Participant 3

Participant 3 engaged in an average of 93% compliance with novel red probes across all phases of treatment. During the green treatment phase, Participant 3 had a mean compliance rate of 100% with novel red probes. During the yellow treatment phase, Participant 3 had an average of 84% compliance with the novel red probes. During the orange treatment phase Participant 3 had a mean compliance rate of 100% with novel red probes. During the red treatment phase, Participant 3 had a mean compliance rate of 100% with novel red probes. During the maintenance phase, Participant 3 had a mean compliance rate of 100% with novel red probes. During the transition treatment phases, Participant 3 had a mean compliance rate of 88% with novel red probes.

Summary of Generalization Results

The mean rates of compliance for all participants indicate that high rates of compliance with novel red probes occurred across each phase of the study. The average compliance rate for all participants was 88% with novel red probes. All participants had high rates of compliance with novel red requests at the end of the treatment phase.

Participant 1 engaged in high rates of compliance with novel requests across each phase of the study. Participant 2's compliance rates with novel red requests increased across treatment phases. Participant 2's compliance with novel red requests was the lowest during the green treatment phase and increased across the treatment phases, to 92% during the red treatment phase. Participant 3 engaged in high rates of compliance with novel red probes during the green treatment phase although compliance rates decreased during the first transition phase. Participant 3's compliance rates increased from the first transition phase to the yellow treatment phase. Participant 3 continued to demonstrate high rates of compliance with novel red probes across each subsequent phase of treatment.

These results indicate that all participants were highly compliant with novel red requests by the end of the treatment phase. The data collected in the current study were sufficient to demonstrate that participants were able to generalize high rates of compliance to novel demands and were able to satisfy this research question.

Research Question 3

Will fading edible reinforcers impact rates of participants' compliance with red requests during a maintenance treatment phase?

Prior to the start of the maintenance treatment phase, each participant demonstrated 80% compliance with red requests for two sessions. Due to the high frequency of edible reinforcers given during the treatment phases, edible reinforcers were systematically faded from a continuous schedule of reinforcement to a variable ratio schedule of 50%, 25%, and finally 0%. During the maintenance treatment phase, each of

the parent participants was able to successfully fade edible reinforcers to a variable ratio schedule of zero percent while maintaining high rates of child compliance with red requests.

All Participants

The same red requests that were given during baseline sessions and the red treatment phase were used during the red maintenance treatment phase. The average rate of compliance during the red maintenance phase for all participants was 98%. The average compliance rate for all participants was 97% when edible reinforcers were given on average of 50% of the time. The average rate of compliance for all participants was 99% when edible reinforcers were given on average of 25% of the time. The average rate of compliance for all participants was 97% when edible reinforcers were given on average 0% of the time for compliant responses during the red maintenance phase.

Participant 1

Participant 1 had a mean compliance rate of 100% with red requests across the red maintenance phase. Participant 1 was compliant with 100% of red requests when edible reinforcers were given an average of 50% of the time during the red maintenance phase. Participant 1 was compliant with 100% of red requests when edible reinforcers were given an average of 25% of the time. During the last maintenance session, edible reinforcers were not given (0%), and Participant 1 was 100% compliant with red requests. Participant 1 successfully completed the maintenance phase of treatment and continued to engage in high rates of compliance with red requests.

Participant 2

Participant 2 had a mean compliance rate of 95% with red requests across the red maintenance phase. Participant 2 was compliant with 92% of red requests when edible reinforcers were given an average of 50% of the time. Participant 2 was compliant with 96% of red requests when edible reinforcers were given 25% of the time. During the last maintenance session, edible reinforcers were not given (0%), and Participant 2 was 96% compliant with red requests during the red maintenance phase. Participant 2 completed the maintenance phase of treatment and continued to engage in high rates of compliance with red requests.

Participant 3

Participant 3 had a mean compliance rate of 99% with red requests during the red maintenance phase. Participant 3 was compliant with 100% of red requests when edible reinforcers were given 50% of the time. Participant 3 was compliant with 100% of red requests when edible reinforcers were given 25% of the time during the red maintenance phase. During the last maintenance session, edible reinforcers were not given (0%), and Participant 3 was 96% compliant with red requests. Participant 3 completed the maintenance phase of treatment and continued to engage in high rates of compliance with red requests.

Summary of Results

On average, participants were able to maintain high rates of compliance with red requests despite fading edible reinforcers from a continuous schedule of reinforcement to

a variable ratio schedule of 0%. The average compliance rate was 98% for all participants across the maintenance treatment phase. The average compliance rates during the red maintenance phase for all participants was similar the average compliance rates of all participants during the red treatment phase. Participant 1 had an average of 100% compliance during the maintenance phase of treatment. Participant 2 had an average compliance rate of 95% during the maintenance phase. Participant 3 had an average of 99% compliance in the maintenance phase. These results indicate that each participant was able to maintain high rates of compliance with red requests during the maintenance treatment phase. The data collected in the current study were able to satisfy this research question.

Research Question 4

Will child compliance rates continue 3 weeks posttreatment as measured by direct observations?

All Participants

A follow-up session was conducted to assess if the rates of child compliance maintained over time. Each of the three participants was observed via telepresence 3 weeks after the final maintenance session concluded. Parent participants were instructed to complete the follow-up compliance session in the same manner as for the final maintenance compliance session (i.e., no edible reinforcers were given). The mean compliance rate at follow-up for all participants was 88% with red requests. The mean compliance at follow-up remained above 80%, which exceeded the goal of the study. The

average compliance rates for all participants were maintained at 3 weeks follow-up.

Participant 1's compliance rate during the follow-up phase was 92%. Three weeks posttreatment Participant 2 was 83% compliant with red requests. Participant 3's compliance rate during the follow-up phase was 88% with red requests. During the follow-up phase, all participants continued to engage in high rates of compliance with red requests. The data indicate all participants maintained high rates of compliance with red requests 3 weeks after the intervention was withdrawn and were able to satisfy this research question.

Research Question 5

Will parents be able to implement the Play Your Way to Compliance program with fidelity (i.e., number of steps accurately completed)?

A Parent Fidelity checklist was created (Appendix H) in order to assess parent participants' implementation of treatment procedures. The Parent Fidelity Checklist included 11 components. The treatment components included were: initiating a compliance session, delivering precision requests, implementing reinforcement procedures and ignoring noncompliant responses. The researcher rated each parent's adherence with compliance session procedures.

The researcher collected parent fidelity data on 11 compliance sessions. The researcher was physically present in the participant's homes for an average of three compliance sessions and collected parent fidelity data via telepresence for an average of 11 compliance sessions. The researcher recorded all observed sessions. A graduate assistant collected parent fidelity data on 60% of recorded observations and completed

the same checklist to ensure reliability. Interrater reliability between the researcher and graduate assistant was 92%, which was calculated using Cohen's Kappa. The agreement between the researcher and the graduate assistant was considered substantial.

All Participants

A training criterion of 80% accuracy was set for all parent participants. Prior to the start of treatment, each parent met the established training criteria. For all participants, the average treatment fidelity was 97.7% across all phases of the study. The average fidelity for all participants when the researcher was physically present in the participants' home settings was 85.8%. The average treatment fidelity when the research observed sessions using telepresence was 96.7%. Based on the average treatment fidelity data, there does not appear to be a large (negative) difference in parent implementation when the researcher was physically present versus using telepresence.

Participant 1

During the initial parent training session, both caregivers for child Participant 1 were trained on the components of the compliance session procedures. Both caregivers implemented an equal number of compliance sessions. The average treatment fidelity for child Participant 1 was 96% across all phases of treatment. During the first compliance session, treatment fidelity was the lowest at 75%. The remaining compliance sessions averaged 99.75% treatment fidelity. The treatment fidelity data indicated that Participant 1's caregivers were able to implement the compliance sessions with a high degree of fidelity.

Participant 2

Although both caregivers were present for the initial parent training session, one caregiver implemented all treatment sessions. The average treatment fidelity for Participant 2 was 88% across all phases of treatment. The caregiver for Participant 2 had the lowest treatment fidelity data during the first compliance session, which was 75%. Excluding the first compliance session, the caregiver for Participant 2's average treatment fidelity was 90%. The treatment fidelity data indicate that Participant 2's caregiver was able to implement the compliance sessions with a high degree of fidelity.

Participant 3

Both caregivers of Participant 3 participated in the parent training session at the outset of the study; however, one caregiver implemented all treatment sessions. The average treatment fidelity for child Participant 3 was 93.9% across all phases of treatment. The caregiver of Participant 3 had the lowest treatment fidelity data during the first compliance session, which was 65%. Excluding the first compliance session, the caregiver of Participant 3's average treatment fidelity was 97.5%. The treatment fidelity data indicate that Participant 3's caregiver was able to implement the compliance sessions with a high degree of fidelity

Based on the parent fidelity data collected by the researcher, it appears that each caregiver was able to implement the procedures to the Play Your Way to Compliance program with high levels of treatment integrity. There did not appear to be a large difference in treatment integrity when the researcher was physically present to observe compliance sessions versus when the researcher used telepresence to observe sessions.

Research Question 6

Will parents maintain fidelity of implementation at follow-up 3 weeks after completing the Play Your Way to Compliance Program?

During the 3-week follow-up session, conducted via telepresence, the researcher recorded the compliance session using the same data collection procedures used during the treatment phases of this study. The parents were instructed to complete a compliance session similar to the final maintenance session of the study. Child participants were given verbal praise; however, no edible reinforcers were provided contingent on compliant responses. The parent participants were observed to implement the compliance session with a high degree of fidelity. The average fidelity for the caregivers of Participant 2 and Participant 3 was 92.8%. Unfortunately, due to a technical error, Participant 1's video file was corrupted and data were not analyzed for this participant.

Participant 2 was observed for a follow-up compliance session after the treatment phase of the study was completed. The caregiver of Participant 2 implemented the compliance session with 97.5% accuracy at follow-up. There was not a large difference in the caregiver's implementation of procedures between treatment sessions and a follow-up compliance session 3 weeks posttreatment. Participant 3 was observed for a follow-up compliances session. The caregiver of Participant 3 implemented the follow-up compliance session with 88% accuracy. There appeared to be no difference in the caregiver's implementation of procedures at follow-up 3 weeks posttreatment.

The average treatment integrity for Participant 2 and Participant 3 was 92.8%. Based on the caregiver data for Participants 2 and 3, it appears that caregivers were able to maintain treatment fidelity at follow-up.

Research Question 7

Will parenting stress decrease after receiving the intervention as measured by scores on the Parenting Stress Index?

Caregivers were asked to complete the Parenting Stress Index-4th Edition (PSI-4) at pre- and posttest. The Parenting Stress Index-4th Edition was designed to assess the magnitude of stress that occurs between parents and their children. Results on the PSI-4 are comprised of two main categories: the Parent and Child Domains. Results from the PSI-4 also provide a Total Stress Scale. The Child Domain was designed to assess characteristics of children that make parenting roles difficult. The Parent Domain assessed characteristics of the parent that may contribute to overall stress. Results of the PSI-4 are most commonly reported using percentiles. Scores that fall between the 16th to 80th percentiles were considered in the normal range, scores that fall between 81th to 84th percentiles fell in the borderline range, and scores that fall between 85th to 99th percentiles were considered in the clinically significant range.

All Participants

The participants' pretreatment ratings on the Child and Parent Domains as well as the Total Stress Scale fell in the normal range. The participant's posttest ratings fell in the normal range on the Parent and Child Domain as well as the Total Stress Scale (Table 6). The average pretest ratings on the Child Domain for all participants fell in the 74th percentile. The average posttest ratings on the Child Domain for the three participants fell in the 66th percentile. The average pretest ratings on the Parent Domain fell in the 45th percentile for all participants. The average posttest ratings on the Parent Domain fell in

Table 6. Average Pre- and Posttest Ratings on the PSI-4

Percentile Scores on the PSI-4			
	Pretest	Posttest	Change
Child Domain			
Distractibility/Hyperactivity	67	74	+7
Adaptability	69	48	-21
Reinforces Parent	75	61	-14
Demandingness	78	62	-16
Mood	83	73	-10
Acceptability	74	75	+1
Total Child Domain	74	66	-8
Parent Domain			
Competence	60	36	-24
Isolation	38	39	+1
Attachment	71	76	+5
Health	31	20	-11
Role Restriction	39	20	-19
Depression	33	36	+3
Spouse	22	20	-2
Total Parent Domain	45	38	-7
Total Stress	56	45	-11

the 38th percentile for the participants. The average pretest measures of Total Stress fell in the 56th percentile. The average posttest ratings for Total Stress fell in the 45th percentile. The Child Domain decreased by 8 percentage points, and the Parent Domain decreased by 7 percentage points. Total Stress decreased by 11 percentage points. There were no large differences in pretreatment and posttreatment domains.

The mean subdomain scores fell in the average range during pre- and posttest ratings. There did appear to be slight changes in the subdomain scores on the Child and

Parent Domains. However the scores indicated no clear pattern of increased or decreased scores from pre- to posttest ratings. These results indicate that parents' stress levels were not impacted (decreased) after participating in the Play Your Way to Compliance Program.

Research Question 8

Will parents report a decrease in scores on the Externalizing Problems scale on the Child Behavior Checklist (CBCL; Achenbach) after receiving the intervention?

Child participants were rated using the Child Behavior Checklist pre- and post-treatment using the 1 ½-5 year preschool version of the Child Behavior Checklist (CBCL). The Externalizing Problems Scale was used to determine treatment effects. Parent Responses have been converted to *T*-Scores. Ratings that fall below a *T*-score of 65 are considered to be in the nonclinical range and are not considered problematic when compared to children of the same age group. *T*-scores between 65 and 69 fall within the borderline-clinical range, whereas scores of 70 and above represent clinically elevated symptom levels.

Externalizing Problems: All Participants

Caregivers of the three participants completed pre- and posttest ratings. The mean pretest *T*-score for Externalizing Problems was in the average range (*T*-score: 62.6). The mean rating for all participants at posttest was in the average range (*T*-score: 58.3). The difference in mean ratings for the participants between pre- and posttreatment was 4.3, less than half a standard deviation.

Prior to treatment, Participant 1's Externalizing Problems rating fell in the average range (*T*-score: 62). Participant 1's posttest rating on the Externalizing Problems scale was also in the average range (*T*-score: 59). The difference in pretest and posttest ratings for Participant 1 was 3 points, less than half a standard deviation. Participant 2's pretreatment ratings on the Externalizing Problems scale fell in the borderline clinical range (*T*-score 66). Participant 2's posttest ratings on the Externalizing Problems scale fell in the average range (*T*-score: 59).

The difference in pretest and posttest ratings for Participant 2 was 7 points, less than one standard deviation. Participant 3's pretest ratings on the Externalizing Problems scale fell in the average range (*T*-score 60). Participant 3's posttest ratings on the Externalizing Problems scale fell in the average range (*T*-score 57). The difference in pretest and posttest ratings for Participant 3 was 3, less than half a standard deviation.

There did not appear to be a large change in *T*-scores for Externalizing Problems for all participants. It does not appear that participating in the Play Your Way to Compliance Program had an impact on the participants' Externalizing Problem behaviors. The data collected through the CBCL checklist provide sufficient information to satisfy this research question.

Research Question 9

Will parents report positive ratings on the Intervention Rating Scale regarding participation in the intervention as measured by mean responses on a 6-point Likert scale?

After the final maintenance treatment session, each caregiver was asked to

complete a brief social validity questionnaire. The questionnaire included 23 statements adapted from the Behavior Intervention Rating Scale (Elliott & Trueting, 1991). Caregivers were instructed to rate the effectiveness of the treatment package by circling the best response on a scale of one through six: 1 = *strongly disagree*, 2 = *disagree*, 3 = *slightly disagree*, 4 = *slightly agree*, 5 = *agree*, 6 = *strongly agree*. Parents rated the program as being favorable ($M = 5.0$). An average rating of five indicates that caregivers agreed the Play Your Way to Compliance Program was beneficial for their child. Table 7 shows the 23 statements and the average ratings of caregivers.

Caregivers' responses of the Play Your Way to Compliance Program were positive. Only one item received a score below a four. These results indicate a positive overall level of satisfaction with the process, effect, and outcome of the treatment package (Table 7).

The questionnaire also included open-ended questions about what the caregivers liked and disliked about the treatment package. When asked about aspects that caregivers liked about treatment package, the caregiver of Participant 1 stated, "There were immediate results!" The caregiver of Participant 1 also reported that she " really liked that the behavior [compliance] carried over into daily life." The caregiver of Participant 1 did not like that the weaning [fading of edibles] was too quick. The caregiver of Participant 2 explained that she liked the specific steps that were included to get my child to comply and I liked the visual aides, the consistency, and really liked scooter. The caregiver of Participant 3 reported she liked the hands on training, and the video demonstrations. The caregivers of Participants 2 and 3 did not indicate any negative aspects of the Play Your Way to Compliance package.

Table 7. Behavior Intervention Rating Scale (Elliot & Trueting, 1991) Item Means as Rated by Parents

Item	Mean Rating
1. This was an acceptable intervention for the child's problem behavior.	5.3
2. Most parents would find this intervention appropriate for behavior problems in addition to the one addressed.	5.3
3. The intervention proved effective in changing the child's problem behavior.	5.3
4. I would suggest the use of this intervention to other parents.	5.3
5. The child's behavior problem was severe enough to warrant use of this intervention.	6.0
6. Most parents would find this intervention suitable for the behavior problem addressed.	5.3
7. The intervention did not result in negative side effects for this child.	6.0
8. The intervention would be an appropriate intervention for a variety of children.	5.3
9. The intervention is consistent with other parenting techniques I have been taught.	4.7
10. The intervention was a fair way to handle the child's noncompliance.	5.3
11. The intervention is reasonable for the behavior problem addressed.	5.3
12. I like the procedures used in the intervention.	5.3
13. The intervention was good a way to handle the behavior problem.	5.3
14. Overall, the intervention was beneficial for the child.	5.3
15. The intervention quickly improved the child's behavior.	4.7
16. The intervention will produce a lasting improvement in the child's behavior.	4.3
17. The intervention improved the child's behavior to the point that it would noticeably deviate from other classmate's behavior.	3.3
18. Soon after using the intervention, a parent would notice a positive change in the problem behavior.	5.0
19. The child's behavior will remain at an improved level even after the intervention is discontinued.	4.0
20. Using the intervention should not only improve the child's problem behavior at home, but also in other settings (e.g., other classrooms, home).	5.0
21. When comparing this child with a well-behaved peer before and after use of the intervention, the child's and the peer's behaviors are more alike after the intervention.	4.7
22. The intervention produced enough improvement in the child's behavior so the behavior no longer is a problem in the home.	4.3
23. Other behaviors related to the problem behavior also are likely to be improved by the intervention.	4.7
Item Average	**5.0**

In general, caregivers reported positive ratings on the parent questionnaire and the caregiver comments were also largely positive. Of the statements the caregivers rated, "The child's behavior problem was severe enough to warrant use of this intervention" and "The intervention did not result in negative side effects for this child," were the statements most agreed with. The statement, "The intervention improved the child's behavior to the point that it would not noticeably deviate from other classmates' behavior," was the least agreed upon statement. Items on the questionnaire that indicated the treatment's effectiveness in increasing compliance rates were given positive ratings. These results indicate that caregivers recognized an improvement in their children's compliant behaviors.

Research Question 10

Will child participants report positive ratings on the Children's Intervention Rating Scale regarding participation in the intervention as measured by mean responses on 4-point Likert scale

Following treatment, child participants completed an adapted version of the Children's Intervention Rating Scale that was given via telepresence by the researcher. The children were provided with a printed version of the rating scale that so they could follow along with the researcher's questioning. Five questions were answered by indicating a score (1 = *really disagree*, 3 = *kind of agree*, and 5 = *really agree*). Descriptive statistics were used to analyze the social validity of the intervention. Participant's mean scores are listed in Table 8. Two of the three child participants completed the survey. Participant 2 did not complete the questionnaire, because the

Table 8. Average Ratings of Two Child Participants From the Modified BIRS.

Item	Participant Mean
1. I liked watching the "Scooter Says" video	4.5
2. I liked singing the "Scooter Says" song	3.5
3. I liked playing the "Scooter Says" game.	4.5
4. I liked playing with my mom/dad	3.5
Total Average Score	4

parent reported child was not able to reliably answer the questions.

The Play Your Way to Compliance Program was perceived as being favorable based on the total mean score of 4. Each question received a mean score above a 3, indicating that the child participants enjoyed this treatment package. The two questions with the highest mean ratings (4.5) were "I liked watching the "Scooter Says" video" and "I liked playing the "Scooter Says" game." Based on the mean scores, participants appeared to enjoy participating in the Play Your Way to Compliance Program. The data collected in the current study were able to satisfy this research question.

CHAPTER 4

DISCUSSION

Autism spectrum disorder (ASD) is a developmental disability that includes deficits in social communication and social interaction and restricted, repetitive patterns of behavior, interests, or activities (American Psychiatric Association [APA], 2013). A core feature associated with ASD is a difficulty with social relatedness, which can make understanding the verbal and nonverbal communications of others difficult. Impairments with social relatedness and inappropriate social interactions can also result in challenging behaviors such as aggression, temper tantrums, and noncompliance in children with ASD (Dawson, Matson, & Cherry, 1998; Matson, Dixon, & Matson, 2005).

Parents and caregivers report noncompliance to be one of the most prevalent problem behaviors in children. Noncompliance has been identified as a keystone behavior and can contribute to the later development of severe conduct problems (Forehand & McMahon, 1981, McMahon & Forehand, 2003). Noncompliance is considered a keystone behavior because children's ability to comply with requests is related to their ability to learn new skills and prosocial behaviors (Rhodes et al., 1993).

Given the increasing prevalence rates of young children with autism and its effects throughout the lifespan, the development and implementation of effective parent training programs is necessary. Treatment programs that address noncompliance is of

critical importance, and intervention strategies that target noncompliance in children assure the best behavioral outcome for children (Stormshak et al., 2000). As effective parent training programs are implemented for children with autism spectrum disorder, it is more likely that individuals with autism will engage in functional activity and prosocial behaviors.

The Play Your Way to Compliance Treatment Package

The Play Your Way to Compliance program (PYWTC) was designed to be a ready-made treatment package for parents. This program combined several evidence-based strategies, such as precision requests, behavioral momentum, planned ignoring, and errorless learning, that are widely used in parent training programs (Ducharme, 2007; Radley et al., 2014; Shriver & Allen, 2008; Kaminski et al., 2008). This program also included high interest materials such as fast hands animation, video modeling, and a compliance jingle. High interest materials were included in the program due to their lasting behavioral outcomes (Milne et al., 2011; Radley et al., 2014).

Main Findings

The current study evaluated the effectiveness of the PYWTC program on increasing compliance in preschoolers with ASD. Four participants were recruited and met inclusion criteria for this study. One participant dropped out. The data of the remaining three participants were included in the results of the study. The study analyzed the compliance rates of participants across multiple phases: treatment (green through red), maintenance, and follow-up. The study also measured compliance rates with

generalization probes across treatment phases. The study assessed parents' fidelity with treatment components and also examined if there were changes between pre- and post-test ratings of the Parenting Stress Index and the Child Behavior Checklist. The acceptability of the treatment package was evaluated through child and parent social validity ratings.

Results of this study indicated that the Play Your Way to Compliance treatment package was effective at increasing compliance rates with red requests for all participants. The mean compliance rate with red requests for all participants increased from 15.5% to 98%, resulting in a group effect size of 5.2. Based on calculations for all participants, the PND was calculated to be a score of 100% and the NAP was calculated to be 1.0. The PND and NAP results indicate that the treatment package had strong effects (Parker & Vannest, 2009).

Similar treatment effects were observed during the maintenance treatment phase. During this phase, edible reinforcers were faded from a continuous schedule of reinforcement to a variable ratio of 50% down to a variable ratio of 0%. High rates of compliance were also observed at follow-up 3 weeks after the treatment was withdrawn. All parents were observed to have a high level of treatment fidelity. Thus, the finding indicates that parents can be trained to implement the Play Your Way to Compliance treatment package. Generalization probes were conducted across all treatment phases to check for changes in compliance with novel red requests. The mean rates of compliance for all participants indicate that high rates of compliance with novel red probes occurred across each phase of the study. Based on these results, it appears that participants generalized compliant responses with novel demands.

Based on pretest and posttest ratings, there were no significant changes on the Parenting Stress Index or the Child Behavior Checklist (CBCL). The Total Life Stress, Rating on the Child Domain, Parent Domain, and Total Life Stress scores were observed to have slight decreases from pre- to posttreatment. However, all pre- and posttest ratings fell in the normal range on the PSI-4. There was also a slight decrease in the pre- and posttest ratings for Externalizing Problems on the Child Behavior Checklist. However, the mean pre- and posttest ratings for participants fell in the normal range on the CBCL. The PYWTC program was not effective at substantially reducing parental stress or externalizing problems for child participants.

High treatment acceptability ratings were found for parent and child participants in this study. Social validity ratings indicate that parent participants involved in this study found the treatment package was easy to implement and produced improvements in their child's compliance rates. The acceptability ratings are critical to the success of a program as parents who do not find a program enjoyable or useful are not likely to implement the treatment package.

Interobserver agreement between independent observers was established and maintained throughout the study (97.9%). A Kappa coefficient was also used for reliability purposes; this coefficient met the 0.80 criteria for all participants (Kappa 94). Significant increases in compliance rates were observed during the treatment phase of this study. Moreover, by the end of the treatment phase each participant was complying within normative levels for typically developing children without problem behavior (Brumfield & Roberts, 1989; McMahon & Forehand, 2003; Shriver & Allen, 1997.) Thus, the present findings suggest that the PYWTCP can produce improvements in the

child's willingness to cooperate with a variety of tasks typically viewed as important by parents of children with autism spectrum disorders.

Common Parent Training Programs

There is an extensive literature base indicating that manualized parent training programs have been effective in reducing problem behaviors. The parent training programs include the Parent Management Training-Oregon (PMTO), Parent Child Interaction Therapy (PCIT), *Helping the Noncompliant Child,* The Incredible Years, *Parent Management Training* (PMT), and *The Tough Kid Parent Book.*

The PMTO program along with PCIT has been extensively validated as a well-established treatment for children with conduct problems (Brestan & Eyberg, 1998; Patterson & Fleischman, 1979; Spaccarelli, Cotler, & Penman, 1992). Research indicates the *Helping the Noncompliant Child* program has been effective in decreasing noncompliant behaviors in children (Forehenad & McMahon, 2003; Forehand & Merchant, 2011). Based on several studies that reviewed The Incredible Years, there were decreases in deviant behavior based on direct observations and parent reports (Webster-Stratton, 1984, 1990, 1994; Webster-Stratton, Kolpacoff, & Hollinsworth, 1988). The PMT program has an extensive literature base purporting the efficacy of the program **(**Kazdin & Weisz, 1998). There is also evidence to support the efficacy of *The Tough Kid Parent Book* strategies in reducing problem behaviors in children (Benoit et al., 2001; Kuhn et al., 2006; Mandal et al., 2000; Neville & Jenson, 1986).

Although there is extensive research indicating the effectiveness of manualized parent training programs, participation in these programs requires a considerable amount

of time by parents. Parent training programs such as The Incredible Years, *Helping the Noncompliant Child,* PCIT, and PMT require approximately 22 hours of training over the course of 10-14 weeks. In addition to the time commitment that these programs require, they are conducted predominantly in clinic-based settings, creating additional demands on parents' time (Eyberg, Nelson, & Boggs, 2008; Forehand & McMahon, 1981; Kazdin, 2005; Webster-Stratton, 1994).

The Play Your Way to Compliance treatment package was distinct from other parent training programs due to the setting and structure of parent training sessions, but similar to other parent training programs because of the parenting skills that were incorporated into the treatment package. Whereas most of the parent training programs are conducted in clinic-based settings, the PYWTC program was conducted solely in the home setting. The Play Your Way to Compliance treatment package required parents to participate in a single, 2-hour parent training session and participants took approximately 7 weeks to complete the program.

Common training strategies included in parent training programs are didactics, observations of parent-child interactions, and in vivo play sessions along with modeling, role-play, and performance feedback. The PYWTC program used a video-based format to train parents. The only other program to incorporate video-based instruction was The Incredible Years. The PYWTC program uses videos to depict parent-child interactions and discuss principles of behavior management (Webster-Stratton & Hammond, 1997).

Common treatment components between the PYWTC program and other parent training programs included teaching parents to give effective demands and provide positive reinforcement, attending skills, and reductive techniques such as time-out. In

addition, the PYWTC program also trained parents to use behavioral momentum and errorless compliance training. Furthermore, no reductive techniques were included in this study's treatment package.

The PYWTC program used high interest materials for child and parent participants. The only other parent training program to include high-interest materials was The Incredible Years parent training program (Webster-Stratton, 1984). The utilization of high-interest media may contribute to participant recall of learned skill steps, use of learned skills, and maintenance of skills. The incorporation of high-interest media may have contributed to the large treatment and follow-up effects for participants in this study.

The PYWTC program included training practices as well as treatment components similar to those in other evidence-based parent training programs that have demonstrated large treatment effects. Important distinctions between the Play Your Way to Compliance treatment package and other parent training programs are the setting, the number of training and treatment sessions that were required, and the reliance on video-based training components. Based on the results of this study, it appears that parents can be trained to implement a manualized treatment package effectively after a single training session, reducing the amount of time parents spend in sessions.

Parent Training Programs: Autism

Research on parent training to address disruptive behaviors and conduct problems are the most widely studied; however, this research base is relevant in addressing problem behaviors for children with ASD. Many parent training programs for children

with ASD share similarities in their focus on operant conditioning and use of applied behavior analysis principles to teach positive parenting strategies (Brookman-Frazee, Vismara, Drahota, Stahmer, & Openden, 2009).

Past research indicates that parent training programs for children with autism were more effective once parents received training in behavior management. Osborne and colleagues (2008) evaluated parent training programs. Their results indicated that instruction in behavior management was critical in helping parents reduce parenting stress and become more effective in implementing skill acquisition programs. The researchers also found that treatment efficacy was significantly affected by the number of treatment sessions, with shorter programs of one to five sessions having a larger effect than programs using more treatment sessions.

The PYWTC program obtained large treatment gains for all participants in this study, although parents were not directly taught the principles of applied behavior analysis. Even so, the treatment components included in the program were based on principles of applied behavior analysis. The study's findings were somewhat inconsistent with the research regarding parent training programs for children with autism. The strong treatment effects of the PYWTC program may have been enhanced due to study accessibility, consistent practice, and other treatment components included in the treatment package.

Kaminski and colleagues (2008) conducted a component analysis to evaluate the effectiveness of program features such as how instruction is delivered and what skills are taught to parents. Components associated with higher effect sizes were indicated for programs that provided instruction on emotional communication and responding

consistently to problem behaviors and required parents to practice their newly acquired skills with their child, regardless of the program content and delivery. Larger effects were found in programs that engaged parents through modeling and role-playing of specific behavior management skills: attending (positive-child interactions), positive reinforcement, planned ignoring, providing clear instructions, and using time-out from reinforcement. In particular, parent training on positive parent-child interactions was found to be predictive of behavioral outcomes for both parents and children. Matson, Mahan, and Matson (2009) also highlighted the importance of targeting operationally defined behaviors that are treatable, using established consequences, and maintaining consistency throughout training.

It is likely that the large treatment effects observed in this study may have been due to the components included in the Play Your Way to Compliance treatment package. Although a component analysis was not conducted for the treatment package, several components, such as operationally defining terms, consistency in training procedures, modeling, role-playing, positive reinforcement, and planned ignoring, were included in the treatment package.

The PYWTC program shared treatment aspects with other parent training programs for children with autism. This study's treatment package taught behavior management strategies to parents such as providing effective demands and positive reinforcement to children, which have been shown to produce large treatment effects in other parent training programs. The PYWTC program differed from previous research studies for children with autism because of the treatment components that were utilized. Using video-based exemplars for both child and parent participants to teach compliance

has not been validated for children with autism who engage in noncompliance. The findings from this study indicate that using a single-parent training session along with video modeling may be feasible.

Errorless Compliance Training

Ducharme (1993) developed the *Errorless Compliance Training* (ECT) program in which parents are trained to systematically deliver increasingly difficult requests and provide positive reinforcement in order to gain compliance in children with ASD. ECT is derived from errorless learning, a behavior analytic strategy designed to increase a child's opportunities for success and reduce errors in responding.

Studies using the ECT program are often implemented using a series of four parent workshops to teach parents how to implement the program. Based on Ducharme and colleagues' training procedures, the purpose of the first workshop is to inform parents about the program. The second workshop introduces parent training procedures. Parents are then trained to deliver effective requests using modeling, rehearsal, and performance feedback. Parents are also trained on data collection procedures. During the third workshop, parents are taught how to provide effective reinforcement for their child's compliant responses as well as ignore noncompliance with requests. The purpose of the fourth workshop is to troubleshoot issues with the treatment program.

ECT has been shown to be effective in increasing compliance to various types of parental requests including academic, play, and adaptive tasks and problem behaviors (Ducharme, 1993, 1994; Ducharme et al., 1993; Ducharme & Ng, 2012). Based on results in multiple studies, there are strong generalization effects with unlearned requests.

Additionally, data indicate that generalization has occurred across different types of requests (Ducharme & Drain, 2004). Several studies assessed the maintenance of treatment effects and found compliance rates maintained at follow-up weeks and even months after treatment was withdrawn. (Ducharme, 1993, 1994; Ducharme et al., 1993; Ducharme & Ng, 2012)

The PYWTC and ECT programs have several similarities. The large increase in compliance rates are comparable to studies using ECT, and add to the literature base on the effectiveness of ECT. This study altered and expanded several aspects of the ECT treatment components. This study altered the Compliance Checklist, created a Reinforcer Checklist, used video modeling (child and adult video models), and incorporated high-interest materials such as a compliance jingle ("Scooter Says"). This study also reduced the number of parent training sessions that were used in previous ECT studies.

The Compliance Checklist used in this study was adapted from Ducharme and colleagues (Ducharme, 1993). Ducharme's Compliance Checklist used a probability hierarchy that rates the difficulty of requests from levels one to four. This study adapted the probability hierarchy by using a color-coded system to increase the usability of the Compliance Checklist with parent participants. This study used similar stimulus fading techniques by starting with green requests and then transitioning to red (difficult) requests. In addition to using a Compliance Checklist, the PYWTC program created a Reinforcer Checklist, using the same color-coded hierarchy as the Compliance Checklist. The purpose of the Reinforcer Checklist was to determine the desirability of edible reinforcers and pair the difficulty of the request (i.e., a red request) with more potent reinforcers.

The ECT program used only four parent training sessions, which is far fewer than many other parent training programs. Based on results from studies using the ECT program, treatment ranges from16-68 treatment sessions (Ducharme, 2010; Ducharme, Harris, & Pontes, 2003). The PYWTCP used a single-parent training session and participants completed the program in approximately 30 treatment sessions, which included a maintenance treatment phase.

Data from ECT studies indicate that participants have strong generalization and maintenance effects. Studies indicated that treatment effects generalized to other tasks, people, and settings (Ducharme, 1993, 1994; Ducharme & Ng, 2012; Ducharme, Popynick, Pontes, & Steele, 1993). Additionally, treatment effects were maintained between 2 to 6 months after treatment was withdrawn. The current study was able to replicate generalization effects. This study used eight novel red probes to assess for generalization to new tasks during the treatment phase. All participants in this study demonstrated high rates of compliance with novel red requests by the end of the treatment phase. Similar to other studies using ECT, this study also obtained strong treatment effects at follow-up. A compliance session that was conducted 3 weeks after treatment was withdrawn indicated that participants in this study maintained the compliance rates after treatment withdrawal.

Video Modeling

Video modeling is the process of watching a video of a peer successfully demonstrating steps to a skill and the appropriate use of the skill or behavior. Video modeling interventions use one of two methods, either self-as-a-model or peer as-a-model

recordings. Several studies support the utility of video modeling. Schopler and Reichler (1971) demonstrated that parents could be trained and successfully acquire behavior management strategies that promoted improvements in their children's behavior. The NAC has classified video modeling as an Established Treatment (National Autism Center, 2009). The use of peer video models (children and adult peer models) may have contributed to the large effect sizes observed in the current study. Both child and adult peer-modeling videos were incorporated into training and treatment procedures. Prior to the start of sessions, child participants watched an animated video, along with a child peer model engaging in compliant behaviors. Having a child watch a video of the targeted behavior (compliance) may have increased the stickiness of the skills.

More recently, Kahn (2012) evaluated the effects of a video modeling intervention to increase positive parenting statements to children with ASD. Meharg and Lipsker (1991) also implemented a video modeling intervention to teach parents to give clear commands and provide contingent reinforcement. Results of these studies indicated that treatment effects were not significant as moderate to small effect sizes were reported. However, treatment integrity was not well documented and may have impacted the outcomes considerably. Additionally, Delano (2007) reviewed 19 programs that used video modeling to target challenging behaviors. The results of this review also indicated mixed results. Buggey (2005) used video self-modeling to address problem behaviors in 4- to11-year-olds that produced large treatment effects shortly after the intervention was implemented.

The PYWTC program incorporated the use of video modeling for child participants and adult peer-modeling videos for parent participants. This study's inclusion

of both child and adult peer-modeling videos is novel. Incorporating video modeling for child and parent participants may have contributed to the findings in this study. Further research targeting child peer-modeling videos only, adult peer-modeling videos only, or a combination of videos may provide further information on the benefit of incorporating video based modeling into parent training programs.

Telehealth Programs

Telehealth services are defined as the "use of electronic information and telecommunications technologies to support long-distance clinical health care, patient and professional health-related education, public health, and health administration" (Office for Advancement of Telehealth). The increased incidence of ASD in the last several years has resulted in a need for behavioral, medical, and educational services for children with ASD. Frequently families encounter difficulty in obtaining services for their children due to barriers such as limited available resources and geographical distance (Kogan et al., 2008). Telehealth services are one way clinicians can provide services to families in an efficient and cost-effective format to address these barriers.

There is a growing body of research investigating the effectiveness of incorporating telehealth into parent training programs. Wacker (2013) successfully trained parents to implement behavioral assessment and intervention strategies using telehealth. Parents were able to effectively conduct functional analysis procedures by receiving coaching via telehealth. Based on the results of the functional analysis, clinicians were able to identify a function of problem behavior for the majority of participants. Wacker (2013) also implemented parent training using telehealth services.

Parents in this study were trained using telehealth to effectively implement a functional communication intervention. Results indicated that participants had a 94% reduction in problem.

Bearss and colleagues (2013) piloted a manualized parent program for children with problem behaviors such as aggression, noncompliance, and tantrums that was conducted comparing live training versus parent training via telehealth. The parent training program was 24 weeks in duration and entailed training parents on behavioral principles, reinforcement strategies, implementing schedules, compliance training, and functional communication training. Although parent participants were reported to implement procedures with high levels of treatment integrity, live training was superior to parents that participated in the program via telehealth (Bearss et al., 2015).

Based on results of studies using telehealth services, parents were able to conduct assessment of problem behavior and subsequently implement behavioral procedures. However, not all programs conducted via telehealth have been effective at reducing problem behavior. A portion of this study was conducted using telehealth. Similar to other studies, there were strong treatment effects. Parents reported high acceptability ratings with the treatment package, which may have been due to the increased feasibility of the program. Parents were able to conduct all aspects of the treatment package in their home environment and conducted sessions based on their availability. It is not clear if the telehealth services contributed to the strong treatment effects. It is promising that parents continued to implement the treatment package with a high degree of treatment integrity when sessions were conducted using telepresence. The PYWTC program has contributed to the growing literature base on the feasibility and acceptability of telehealth services for

children who exhibit problem behaviors.

Limitations and Future Research

Although the current study contributes to the literature in the areas of parent training, the results of the current study need to be viewed in light of their limitations. The current study's findings are limited by a small sample size as well as the attrition of one participant. As previously mentioned, a participant completed all treatment phases except the maintenance treatment phase. The parent reported that she was highly satisfied with the treatment package and enjoyed using the program throughout the treatment phases. This participant represents a loss of data, and weakens the ability to evaluate the PYWTC program when delivered by trained parents. The current study does lack data for one participant, but the results for the remaining three participants demonstrate the utility of the compliance program.

The current study used a nonconcurrent multiple baseline design. This design is considered less rigorous than concurrent multiple baseline design (Johnston & Pennypacker, 1980). It is a weaker design because the data collection is staggered rather than being collected at the same time. Based on the single-case research design standards outlined by Kratochowill et al. (2010), it is recommended that studies include at least five data points per phase. A limitation of this study is that there were fewer than five data points in the baseline and treatment phases. Future studies could use a concurrent multiple baseline design to evaluate the effectiveness of the PYWTC program with at least five data points per phase to strengthen the research design.

The PYWTC program includes several behavior strategies. This intervention was

implemented as a treatment package and therefore no component analysis was conducted. It is unknown if there were any behavioral strategies that were more effective than others and what components had a direct effect on behavior change. Prior research indicates that strategies such as precision commands, errorless compliance training, and video modeling are effective when used in isolation. Future research could evaluate the PYWTC program using a component analysis to identify if any variables were effective in increasing child compliance rates.

Future research may also evaluate the efficacy of parent training when conducted entirely via telepresence. The researcher in the current study was able to travel to each participant's home to facilitate training and treatment, but this is highly unlikely unless families have in-home support services for their children. Many families do not have access to such opportunities. The evaluation of parent training conducted entirely via telepresence would be beneficial in providing more individuals with effective intervention for children with ASD.

Implications for Practice

Although there is a breadth of efficacious treatments for autism, research has found that treatments are rarely used due to barriers such as complexity, compatibility, and relative advantage. Research has suggested that innovative treatments that readily provide and utilize multiple evidence-based practices are more likely to be implemented in their natural settings (Boardman et al., 2005; Dingfelder & Mandell, 2011). Of 10 comprehensive programs for children with autism, Lord (2005) indicated that only four programs are commercially packaged or have manuals readily available. The PYWTC

program addresses these concerns by providing a ready-made and available package with multiple evidence-based practices and clear instructions on implementation.

Results of the current study provide support for the administration of the PYWTC program by trained parents who have children with autism and engage in high rates of noncompliant behaviors. The results suggest that the PYWTC program was beneficial for the children included in the program, with increases in compliance being maintained at follow-up. Based on feedback from parent and child participants, the program was found to be socially valid.

The current study suggests that parents may be trained to become effective facilitators of evidence-based practices. In this study, parents were trained to implement the treatment packed in a single 2-hour session using direct instruction, coaching, and video modeling. Results indicated that parents were able to effectively implement the treatment package with high levels of treatment fidelity.

Telehealth services are one way that clinicians can provide services to families in an efficient and cost-effective format. This study incorporated the use of telehealth to observe parents implementing treatment components, as well as to provide coaching and feedback to parents. All participants demonstrated large increases in compliance rates after participating in this study. Additionally, parents and children rated this program as socially valid. These results are promising, and contribute to the research that using telehealth to reduce problem behavior is feasible. These findings are extremely important for families without access to services, as parents themselves may become effective facilitators of interventions. Overall, the results of the study suggest that the PYWTCP program, when presented by trained parents, is an acceptable treatment option.

APPENDIX A

CONSENT FORMS

Parent Permission for Initial Observation

Dear Parent:

Purpose: The purpose of the study is to increase compliance rates of preschool aged children who display low rates of compliance to parental instructions. In order to determine if your child would be a good candidate for participation in this study, I would like permission for trained graduate students to observe your child in your home setting.

Procedure: With your permission, trained graduate students will observe and record the percentage of opportunities that your child follows your directions in your home.

After the observations are completed, the researcher will contact you about the results. At that time, the researcher will also let you know if your child is a good candidate to continue participation in the study. If it is determined that your child is a good candidate, the researcher will explain additional procedures involved in the intervention study and invite you to have your child participate in the study. If you choose not to have your child participate or if your child is not observed to be a good candidate for the study, you will still be given the option of having the researcher provide you with consultation concerning your child's behavior.

Duration: The observation will occur during afternoon or evening hours and are recorded for 15 minutes. A total of three observations will be conducted across three different days.

Confidentiality: Only your child's first name will be recorded on the observation form. Observation forms of students who do not continue or participate in the study will be destroyed. Methods for maintaining confidentiality of students who continue in the study will be communicated to you prior to you making a decision regarding being included in the study.

Risk/Benefits: Potential risks involved in home observations include disruption to home and family routines and embarrassment or self-consciousness at having someone observe behaviors in the home. Potential benefits include the opportunity to participate in a research project designed to increase compliance to parent instructions.

Withdrawal: After giving initial permission, consent can be withdrawn at any time by sending a written note to your child's teacher asking that no further observations be done on your child and/or calling the primary researcher at (916) 612-6735. If you withdraw consent, any observation forms that have been completed on your child will be destroyed immediately.

Person to Contact: If you have questions, complaints, or concerns about this study, you may contact the primary researcher, Holly Majszak, at 231-944-2645 or at holly.majszak@utah.edu. If you feel you have been harmed as a result of participation, please call the faculty advisor, Dr. William R. Jenson, at (801) 581-7148. If Dr. Jenson is unavailable, please leave a message and your call will be returned as soon as possible.

Institutional Review Board: Contact the Institutional Review Board (IRB) if you have questions regarding your child's rights as a research participant. Also, contact the IRB if you have questions, complaints, or concerns that you do not feel you can discuss with the primary investigator. The University of Utah IRB may be reached by phone at (801) 581 – 3655 or by e-mail at irb@hsc.utah.edu.

Research Participant Advocate: You may also contact the Research Participant Advocate (RPA) by phone at (801) 581-3803 or by e-mail at participant.advocate@hsc.utah.edu.

It is up to you to decide whether to allow your child to take part in this study. Refusal to allow your child to participate or the decision to withdraw your child from this research study will involve no penalty or loss of benefits to which your child is otherwise entitled, nor will it affect your or your child's relationship with the investigator or classroom teacher. There are no costs or compensation for study participation.

Your permission to observe your child at home will be greatly appreciated. I hope that the study will prove helpful for many young children and their families.

Holly Majszak
Doctoral Candidate in Educational Psychology
University of Utah

CONSENT:

By signing this consent form, I confirm that I have read the information in this parent permission form and have had the opportunity to ask questions. I will be given a signed copy of this parent permission form. I voluntarily agree to allow my child to be observed in my home as part of this study.

_____
Child's Name

_____
Parent's Name

_____
Parent/Guardian's Signature

_____
Date

_____
Relationship to Child

Parent Consent for Study Participation

BACKGROUND

Your child has been asked to take part in a research study. Before you decide, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully. Please ask if there is anything that is not clear or if you would like more information. Take time to decide whether you will allow your child to take part in this study.

The purpose of the study is to increase compliance rates of preschool aged children who have great difficulty in complying with parental instructions. The study will involve you, as a parent, attending two parent sessions where trained professionals will provide strategies to effectively deliver instructions and reinforcement. Additionally, you will be conducting brief sessions at home with your child to practice skills learned. By learning effective strategies to deliver instructions, it is also the goal of this study to increase your child's compliance to your instructions that are rarely followed.

STUDY PROCEDURE

If your child is considered a good candidate and you wish to continue, you will participate in a parent training intervention aimed to increase your child's compliance rates. Participating in the study would include the following: 1) you attending two parent sessions and a feedback session, 2) you completing questionnaires about your child's behaviors and preferences and about any potential stressors for you, 3) you and your child viewing videos 4) you practicing skills learned and your child responding to your instructions, 5) continued home observations and recording of sessions, 6) consulting with the researcher via a web-based program, and 7) you and your child filling out brief questionnaires about your experience of being in the study. Follow up observations of your child in the home will be conducted approximately 3 weeks after your last home session.

RISKS

The risks of this study are minimal. Potential risks involved include disruption to home and family routines by the presence of the researcher and/or trained graduate students and embarrassment or self-consciousness from being observed. Participation in this study is completely optional and at your own discretion.

BENEFITS

Although benefits can not be guaranteed, possible benefits include enhancing your child's skills in following directions and complying with requests with parents or other adults, which in turn, could increase his or her ability to acquire or engage in new skills or prosocial behaviors.

CONFIDENTIALITY

All research records and information that identifies your child will be private to the extent allowed by law. Records about your child will be kept on computers protected with passwords and encryption and filed in locked cabinets. Only those who work with this study or are performing their job duties for the University of Utah will be allowed access to your child's information.

Observation forms and questionnaires will only contain the child's first name. After the study is completed, data will be analyzed and each child will be assigned a letter name such as "Participant A" or "Participant B", etc. In publications, your child's name will be removed and provided with this pseudonym that will be used when reporting results of this study.

Person to Contact

If you have questions, complaints, or concerns about this study, you may contact the primary investigator, Holly Majszak by phone or by e-mail at holly.majszak @utah.edu. If you feel your child has been harmed as a result of participation, please call the faculty advisor, Dr. William Jenson, at (801) 581-7148 during regular business hours. If Dr. Jenson is unavailable, please leave a message and your call will be returned as soon as possible.

Institutional Review Board: Contact the Institutional Review Board (IRB) if you have questions regarding your rights as a research participant. Also, contact the IRB if you have questions, complaints, or concerns in which you do not feel can be discussed with the investigator. The University of Utah IRB may be reached by phone at (801) 581-3655 or by e-mail at irb@hsc.utah.edu.

Research Participant Advocate: You may also contact the Research Participant Advocate (RPA) by phone at (801) 581-3803 or by email at participant.advocate@hsc.utah.edu.

VOLUNTARY PARTICIPATION

It is up to you to decide whether to participate in this study. Research studies include only people who choose to take part. You can tell us that you do not want your child to be in this study at any time. Your child can start the study and then choose to stop the study later. Refusal to participate or the decision to withdraw from the study will involve no penalty or loss of benefits to which you or your child are otherwise entitled to, nor will it affect your relationship with the investigator or the classroom teacher.

COSTS AND COMPENSATION TO PARTICIPANTS

There are no costs or compensation for participation in this study. The anticipated conclusion of this study is Summer 2015. After the study is complete, I would be happy to share the results with you, as well as any possible recommendations for your child.

CONSENT

By signing this consent form, I confirm I have read the information in this parental consent form and have had the opportunity to ask questions. I will be given a signed copy of this parental consent form. I voluntarily agree to participate and allow my child to take part in this study.

_____
Child's Name

_____
Parent/Guardian's Name

_____
Parent/Guardian's Signature

_____
Date

_____
Relationship to Child

_____
Name of Person Obtaining Consent

_____
Signature of Person Obtaining Consent

_____
Date

APPENDIX B

DIRECT BEHAVIOR RATING FORM

Your Name: _____

Email Address: _____

Phone Contact: _____

Home Address:_____

---

1. Please provide the following information about your child:

Name: _____ Birthdate: _____ Age: _____

Diagnoses: _____

- Date of last evaluation: _____
- Cognitive testing completed: _____ Yes _____ No _____ Don't Know
- Copy of evaluation available: _____Yes _____ No

Previous treatments or services, if any: _____

Current treatment or services, if any: _____

Medications, if any: _____

Dietary restrictions, if any: _____

2. Please tell us about your child's development and current functioning:

SELF-HELP ☐ Requires significant support ☐Requires some support
☐Requires little support ☐Requires no support

_____

LANGUAGE ☐Can speak in full sentences ☐Can speak in short phrases
☐Can speak a few words ☐Cannot speak 1-2 words

_____

_____

OTHER

3. **Please tell us if your child exhibits the following behaviors and use the following scale to rate how often or how intense the behaviors are:**

How often the behavior occurs:

```
|_____|_____|_____|_____|_____|_____|_____|_____|_____|_____|_____|
|     |     |     |     |     |     |     |     |     |     |     |
0     1     2     3     4     5     6     7     8     9     10
0%                        50%                       100%
Never                     Sometimes                 Always
```

How intense the behavior is:

```
|_____|_____|_____|_____|_____|_____|_____|_____|_____|_____|_____|
|     |     |     |     |     |     |     |     |     |     |     |
0     1     2     3     4     5     6     7     8     9     10
Mild                      Moderate                  Severe
```

☐AGGRESSION
How often: _____ How intense: _____

☐SELF-INJURY
How often: _____ How intense: _____

☐REPETITIVE/SELF-STIMULATORY
How often: _____ How intense: _____

☐TEMPER TANTRUMS
How often: _____ How intense: _____

☐OTHER

APPENDIX C

COMPLIANCE PROBABILITY CHECKLIST

Compliance Probability Checklist

Child's Name: _____ Completed By: _____

	Almost Always (76-100%)	Usually (51-75%)	Occasionally (26-50%)	Rarely (0-25%)	Skill not learned	Skill not important
PLAY						
Get your (toy)						
Play with your (toy)						
Pick a game/activity						
Come here						
Come sit down						
Sit next to me						
Play with me						
My turn						
Wait your turn						
Take your turn						
Give me the (item)						
Find the (item)						
Show me the (item)						
Touch the (item)						
Pick up the (item)						
Put the (item) down						
Throw me the ball						
Catch the ball						
Kick the ball						

Put the shapes in the sorter						
String the beads						
Stack the blocks						
Build a tower						
Build the tracks						
Push the train						
Push the car						
Put a piece in the puzzle						
Draw a picture						
Color the picture						
Turn on the music						
Dance with me						
Sing with me						
Pick a song						
Jump up and down						
Turn around						
Stand up						
Stop/Freeze						
Copy me/Do this						
Let's play hide and go seek						
Let's play ring around the rosy						

HYGIENE						
Wash your hands						
Wash your face						
Wash your mouth						
Wash your hair						
Rinse your hands						
Rinse your mouth						
Rinse your hair						
Dry your hands						
Dry your mouth						
Dry your face						
Dry your hair						
Comb your hair						
Brush your teeth						
Turn on the water						
Turn off the water						
Use the soap						
Take a bath						
Put toothpaste on your toothbrush						
Put the cap on the toothpaste						
Wet the toothbrush						
Spit into the sink						
Put the toothbrush away						

Put the toothpaste away						
Get a tissue						
Throw the tissue away						
Blow your nose						
Wipe your nose						
Wipe hands						
Wipe your face/mouth						
Wipe your bottom						
Wipe your feet/shoes						
Go potty						
Close the door						
Flush the toilet						
Throw the toilet paper away						
Hang up the towel						
Throw the paper towel away						
	Almost Always (76-100%)	Usually (51-75%)	Occasionally (26-50%)	Rarely (0-25%)	Skill not learned	Skill not important
CLEAN UP						
Pick up your (item)						
Put your (dish/cup) into the sink/on the counter						
Put the (item) into						

the fridge						
Put your school bag away						
Put your worksheets away						
Put your toys away						
Put your shoes away						
Put your (clothing item) into the drawer						
Put your (clothing item) into the dirty clothes hamper						
Put the (crayons/markers) into the box						
Put the pencils away						
Put the books on the shelf						
Put the lid on the (item)						
Stack the papers						
Close the box						
Close the bin						
Close the (item) bag						
Hang up your towel						
Hang up your coat						

Fold your clothes						
Make your bed						
Wash the (item)						
Scrub the (item)						
Dry the (item)						
Throw the (item) into the garbage						
Pour the (item) into the sink						
Turn off the lights						
Turn off the water						
Wipe the counter						
Wipe the table						
Wipe/sweep the floor						
Wipe the spill						
	Almost Always (76-100%)	Usually (51-75%)	Occasionally (26-50%)	Rarely (0-25%)	Skill not learned	Skill not important
MEAL TIME						
Come here						
Sit down						
Stay in your seat						

Feet down						
Hands on the (table/lap)						
Speak softly						
Chew with your mouth closed						
Put your (bowl/plate) on the table						
Keep (toy) on the table						
Keep (food) on the plate						
Use your spoon						
Use your fork						
Take a bite						
Chew your food						
Eat your (veggie)						
Eat your (fruit)						
Finish your (item)						
Drink your water						
Drink your juice						
Drink your milk						
	Almost Always (76-100%)	Usually (51-75%)	Occasionally (26-50%)	Rarely (0-25%)	Skill not learned	Skill not important
BEDTIME						
Turn off the TV						
Turn off the iPad						
Turn off the game						

Clean up the (toys)						
Eat your bedtime snack						
Brush your teeth						
Wash your face						
Take a bath						
Go potty						
Take off your clothes						
Put your dirty clothes into the hamper						
Put on your pajamas						
Pick out tomorrow's clothes						
Pick a book						
Turn off the light						
Turn on the nightlight						
Say a prayer						
Get under the covers						
Stay in bed						

APPENDIX D

REINFORCER CHECKLIST

REINFORCER CHECKLIST

	No Value	Small Value	Some Value	Good Value	Great Value
CANDIES					
Blow-Pop Lollipop					
Boston Baked Beans					
Bottle Caps					
Candy Buttons					
Candy Cane					
Candy Corn					
Chewing Gum					
Dots					
Dum Dum Lollipop					
Gobstoppers					
Good & Plenty Licorice					
Gummy Bears					
Gummy Worms					
Gushers					
Hot Tamales					
Jawbreakers					
Jelly Beans					
Lemon Heads					
Licorice					
Life Savers					
Mamba					
Mentos					
Mike & Ikes					
Nerds					
Now and Later					
Peppermint Hard Candy					
Pez Candy					
Pixie Stix					
Pop Rocks					
Red Hots					
Runts					
Skittles					
Smarties					
Sour Patch Kids					
Sour Patch Straws					

	No Value	Small Value	Some Value	Good Value	Great Value
CANDIES					
Spree Chewy Candy					
Starburst					
Swedish Fish					
Sweetarts					
Sweethearts					
Tootsie Pop					
Tootsie Roll					
Twizzlers					
Warheads					
Werther's Caramels					
CHOCOLATES					
100 Grand					
3 Musketeers					
Almond Joy					
Andes Mints					
Butterfinger					
Heath					
Hershey's Crunch					
Hershey's Kisses					
Junior Mints					
Kit Kat					
M& Ms					
Milk Duds					
Milky Way					
Mounds					
Pay Day					
Peanut Brittle					
Reese's Peanut Butter					
Reese's Pieces					
Sixlets					
Snickers					
Twix					
Whoppers					
York Peppermint					

	No Value	Small Value	Some Value	Good Value	Great Value
CRACKERS					
Cheez-its					
Goldfish					
Graham Crackers					
Ritz Crackers					
Saltine Crackers					
Teddy Grahams					
Vanilla Wafers					
Wheat Thins					
COOKIES					
Chocolate Chip Cookie					
Oreos					
Oatmeal Raisin Cookie					
Peanut Butter Cookie					
Snickerdoodle Cookie					
Sugar Cookie					
White Chocolate Cookie					
CEREALS					
Apple Jacks					
Cap'n Crunch					
Cheerios					
Cinnamon Toast Crunch					
Coco Puffs					
Cookie Crisp					
Fruit Loops					
Golden Grahams					
Honey Comb					
Kix					
Lucky Charms					
Trix					
FRUITS/VEGGIES					
Apples					
Bananas					

	No Value	Small Value	Some Value	Good Value	Great Value
FRUITS/VEGGIES					
Blackberries					
Blueberries					
Cantaloupe					
Carrots					
Celery					
Cherries					
Cranberries					
Cucumbers					
Grapes					
Kiwis					
Mangos					
Nectarines					
Oranges					
Peaches					
Pears					
Pineapple					
Raspberries					
Strawberries					
Watermelon					
SNACKS					
Almonds					
Apple Sauce					
Bagel Bites					
Brownie					
Cake Pop/Ball					
Cashews					
Cheese Puffs					
Cheetos					
Chex Mix					
Chicken Nuggets					
Chocolate-Covered Pretzels					
Chocolate-Covered Raisins					
Chocolate Pudding					
Corn Dog					
Cotton Candy					

	No Value	Small Value	Some Value	Good Value	Great Value
SNACKS					
Cracker Jacks					
Cupcake					
French Fries					
Frito Chips					
Fruit Roll-Up					
Fruit Snacks					
Marshmallows					
Peanuts					
Pecans					
Pistachios					
Popcorn					
Popsicle					
Pop Tart					
Poptato Chips					
Pretzels					
Raisins					
Rice Cakes					
Rice Krispy Treat					
Rice Puffs					
String Cheese					
Walnuts					
Yogurt					
Yogurt-Covered Raisins					
OTHER					

APPENDIX E

PARENT TRAINING MATERIALS

IFEED-AV

I - Immediate. Provide reinforcement immediately after the desired behavior.

F - Frequent. Provide reinforcement frequently and consistently.

E - Enthusiasm. Show enthusiasm and excitement when delivering reinforcement.

E - Eye contact. Make eye contact with your child when delivering reinforcement.

D - Describe. Describe the specific behavior you are reinforcing.

A - Anticipation. Build anticipation for the reward and get your child excited to earn it.

V - Variety. Vary the reinforcements to keep anticipation and motivation high.

PLANNED IGNORING

1. Break Eye Contact. Turn your head, turn around or leave the room, if necessary.

2. Show no emotion. Use stony silence.

3. Ignore by engaging in another activity or paying attention to something or someone else. Finding other activities or places in the house will be helpful when using extinction procedures. Find household chores that need to be completed, for example vacuuming, close yourself in the bathroom or do a preferred activity like reading or listening to music.

4. Do not give in. Expect the behavior to worsen before it gets better. If you give in, your child might learn that when he acts bad enough and for long enough, you will relent.

5. Beware of bootleg reinforecment. If the response you are ignoring is not decreasing, others might be maintaining it. There may be sympathetic family members or friends that might give in when the child is displaying inappropriate behaviors. Ask them to support your ignoring behavior, and let them know you appreciate their support.

6. Resist the urge to nag. For most children, nagging will actually strengthen the undesirable behavior. This goes back to using stony silence.

APPENDIX F

REQUEST HIERARCHY

SUMMARY OF REQUESTS

Participant 1

GREEN
1. Turn on Water
2. Copy Me/Do This
3. Put Shoes Away
4. Put Toys Away
5. Turn off T.V.
6. Fist Bump/Knuckles
7. Take a Drink
8. Put Item in Trash

ORANGE
1. Get Toy
2. Play With Me
3. Find Item
4. Catch Ball
5. Pick Up Item
6. Put Dish/Cup on Counter
7. Wash Hands
8. Close Door

YELLOW
1. Come Here
2. Wipe Hands
3. Comb Hair
4. Jump Up and Down
5. Kick Ball
6. Throw Ball
7. Stand Up
8. Sit Down

RED
1. Put Clothes in Hamper
2. Put Clothes in Drawer
3.Draw a Picture
4. Wait Turn
5. My Turn
6. Wipe Table
7. Brush Teeth
8. Turn off iPad

SUMMARY OF REQUESTS

Participant 2

GREEN
1. Close Door
2. Go Potty
3. Flush Toilet
4. Give a kiss
5. Give Knuckles
6. Sign “Please”
7. Sign “Thank You”
8. Take a Drink

ORANGE
1. Give Me Item
2. Put Toy Away
3. Turn on Water
4. Wash Hands
5. Wipe Face
6. Put Piece in Puzzle
7. Sit Next to Me
8. Wipe an Item

YELLOW
1. Come Here
2. Sit Down
3. Take a Bite
4. Pick up Item
5. Jump Up and Down
6. Stand Up
7. Get a Toy
8. Put Item in Trash

RED
1. Turn Off Television
2. Put Away Book
3. Find Item
4. Turn Around
5. Put Item Down
6. Brush Teeth
7. Turn Off Water
8. Use Soap

SUMMARY OF REQUESTS

Participant 3

GREEN
1. Get Toy
2. Throw Ball
3. Catch Ball
4. Jump Up and Down
5. Ring Around Rosy
6. Build Tower (Blocks)
7. Put in Puzzle Piece
8. Push the Car (Toy)

ORANGE
1. Come Here
2. My Turn
3. Put Item Down
4. Draw a Picture
5. Put Shoes Away
6. Put Books on Shelf
7. Turn Off Lights
8. Give Me (Item)

YELLOW
1. Take a Drink
2. Clean Up Toys
3. Wipe Hands
4. Put Item in Trash
5. Stand Up
6. Copy Me/Do This
7. Turn Around
8. Sit Next to Me

RED
1. Brush Teeth
2. Put Toothpaste on Toothbrush
3.Wipe Spill
4. Find Item
5. Build Tracks (Train)
6. Get Tissue
7. Wipe Nose
8.Turn Off Tablet

APPENDIX G

COMPLIANCE DATA SHEETS

Compliance Data Sheet

Baseline Observations

Child Name: _____ **Observer:** _____

	Trials (+ or -)			
Requests	**1**	**2**	**3**	**4**

Total = $\frac{\text{(total +)}}{\text{(total trials)}} \times 100$

\

Compliance Data Sheet

Green Requests

Child Name: _____ **Date:** _____

Observer: _____

Requests	Trials (+ or -)			Total
	1	2	3	
1				
2				(total +) ÷ (total trials) × 100
3				
4				
5				
6				
7				
8				

REINFORCERS:

EDIBLES	PRAISE STATEMENTS	
	Way to go!	You did it!
	You are awesome!	Nice job!
	Thanks for listening!	What a great listener!
	Woo hoo!	High five!
	All right!	That was awesome!
	Great job!	Perfect!
	I loved that you did it!	Yay!

Compliance Data Sheet

Transition (8G 2Y)

Child Name: _____ Observer: _____ Date: _____

	Trials (+ or -)			
Requests	**1**	**2**	**3**	**4**
				X
				X
				X
				X
				X
				X
				X
				X
				X
				X

Total = _____ (Total +) ÷ _____ (Total # of Requests) x 100

Session Notes:

EDIBLE REINFORCERS	VERBAL PRAISE STATEMENTS	
	Thank you for ___!	Nice job ___!
	I love how you ___!	Yay! You ___!
	Look at you ___!	I like that you ___!
	Awesome job ___!	Great listening and ___!
	Thank you for following directions!	I love that you listened!

Compliance Data Sheet

Child Name: _____ Observer: _____ Date: _____

	Trials (+ or -)			
Requests	**1**	**2**	**3**	
				X
				X
				X
				X
				X
				X
				X
				X

Total = $\frac{\text{Total +}}{\text{Total # of Requests}}$ ÷ x 100

Session Notes:

EDIBLE REINFORCERS	VERBAL PRAISE STATEMENTS	
	Thank you for ___!	Nice job ___!
	I love how you ___!	Yay! You ___!
	Look at you ___!	I like that you ___!
	Awesome job ___!	Great listening and ___!
	Thank you for following directions!	I love that you listened!

Compliance Data Sheet

Yellow Transition (6Y 2G)

Child Name: _____ Observer: _____ Date: _____

Requests	Trials (+ or -)			
	1	2	3	4
				X
				X
				X
				X
				X
				X
				X
				X

Total = _____ (Total +) ÷ _____ (Total # of Requests) x 100

Session Notes:

EDIBLE REINFORCERS	VERBAL PRAISE STATEMENTS	
	Thank you for ___!	Nice job ___!
	I love how you ___!	Yay! You ___!
	Look at you ___!	I like that you ___!
	Awesome job ___!	Great listening and ___!
	Thank you for following directions!	I love that you listened!

Compliance Data Sheet

Child Name: _____ Observer: _____ Date: _____

Requests	Trials (+ or -) 1	2	3	4
				X
				X
				X
				X
				X
				X
				X
				X

Total = _____ (Total +) ÷ _____ (Total # of Requests) x 100

Session Notes:

EDIBLE REINFORCERS	VERBAL PRAISE STATEMENTS	
	Thank you for ___!	Nice job ___!
	I love how you ___!	Yay! You ___!
	Look at you ___!	I like that you ___!
	Awesome job ___!	Great listening and ___!
	Thank you for following directions!	I love that you listened!

Compliance Data Sheet

Child Name: _____ Observer: _____ Date: _____

Requests	Trials (+ or -) 1	2	3	4
				X
				X
				X
				X
				X
				X
				X
				X
				X
				X

Total = _____ / Total + ÷ _____ / Total # of Requests x 100

Session Notes:

EDIBLE REINFORCERS	VERBAL PRAISE STATEMENTS	
	Thank you for ___!	Nice job ___!
	I love how you ___!	Yay! You ___!
	Look at you ___!	I like that you ___!
	Awesome job ___!	Great listening and ___!
	Thank you for following directions!	I love that you listened!

Compliance Data Sheet

Child Name: _____ Observer: _____ Date: _____

Requests	Trials (+ or -) 1	2	3	
				X
				X
				X
				X
				X
				X
				X
				X

Total = _____ (Total +) ÷ _____ (Total # of Requests) x 100

Session Notes:

EDIBLE REINFORCERS	VERBAL PRAISE STATEMENTS	
	Thank you for ___!	Nice job ___!
	I love how you ___!	Yay! You ___!
	Look at you ___!	I like that you ___!
	Awesome job ___!	Great listening and ___!
	Thank you for following directions!	I love that you listened!

Compliance Data Sheet

Child Name: _____ Observer: _____ Date: _____

	Trials (+ or -)			
Requests	**1**	**2**	**3**	**4**
				X
				X
				X
				X
				X
				X
				X
				X

Total = _____ (Total +) ÷ _____ (Total # of Requests) x 100

Session Notes:

EDIBLE REINFORCERS	VERBAL PRAISE STATEMENTS	
	Thank you for ___!	Nice job ___!
	I love how you ___!	Yay! You ___!
	Look at you ___!	I like that you ___!
	Awesome job ___!	Great listening and ___!
	Thank you for following directions!	I love that you listened!

Compliance Data Sheet

Child Name: _____ Observer: _____ Date: _____

	Trials (+ or -)			
Requests	**1**	**2**	**3**	**4**
				X
				X
				X
				X
				X
				X
				X
				X

Total = _____ (Total +) ÷ _____ (Total # of Requests) x 100

Session Notes:

EDIBLE REINFORCERS	VERBAL PRAISE STATEMENTS	
	Thank you for ___!	Nice job ___!
	I love how you ___!	Yay! You ___!
	Look at you ___!	I like that you ___!
	Awesome job ___!	Great listening and ___!
	Thank you for following directions!	I love that you listened!

Compliance Data Sheet

Child Name: _____ Observer: _____ Date: _____

	Trials (+ or -)			
Requests	**1**	**2**	**3**	**4**
				X
				X
				X
				X
				X
				X
				X
				X
				X
				X

Total = _____ / Total + ÷ _____ / Total # of Requests x 100

Session Notes:

EDIBLE REINFORCERS	VERBAL PRAISE STATEMENTS	
	Thank you for ___!	Nice job ___!
	I love how you ___!	Yay! You ___!
	Look at you ___!	I like that you ___!
	Awesome job ___!	Great listening and ___!
	Thank you for following directions!	I love that you listened!

Compliance Data Sheet

Child Name: _____ Observer: _____ Date: _____

Requests	Trials (+ or -) 1	2	3	
				X
				X
				X
				X
				X
				X
				X
				X

Total = _____ (Total +) ÷ _____ (Total # of Requests) x 100

Session Notes:

EDIBLE REINFORCERS	VERBAL PRAISE STATEMENTS	
	Thank you for ___!	Nice job ___!
	I love how you ___!	Yay! You ___!
	Look at you ___!	I like that you ___!
	Awesome job ___!	Great listening and ___!
	Thank you for following directions!	I love that you listened!

Compliance Data Sheet

Child Name: _____ Observer: _____ Date: _____

Requests	Trials (+ or -) 1	2	3	4
				X
				X
				X
				X
				X
				X
				X
				X

Total = _____ (Total +) ÷ _____ (Total # of Requests) x 100

Session Notes:

EDIBLE REINFORCERS	VERBAL PRAISE STATEMENTS	
	Thank you for ___!	Nice job ___!
	I love how you ___!	Yay! You ___!
	Look at you ___!	I like that you ___!
	Awesome job ___!	Great listening and ___!
	Thank you for following directions!	I love that you listened!

Compliance Data Sheet

Child Name: _____ Observer: _____ Date: _____

	Trials (+ or -)			
Requests	**1**	**2**	**3**	**4**
				X
				X
				X
				X
				X
				X
				X
				X

Total = _____ (Total +) ÷ _____ (Total # of Requests) x 100

Session Notes:

EDIBLE REINFORCERS	VERBAL PRAISE STATEMENTS	
	Thank you for ___!	Nice job ___!
	I love how you ___!	Yay! You ___!
	Look at you ___!	I like that you ___!
	Awesome job ___!	Great listening and ___!
	Thank you for following directions!	I love that you listened!

Compliance & Generalization Data Sheet

Child Name: _____ **Observer:** _____

Setting: _____ **Date:** _____

Requests Green Yellow Orange Red	**Trials** (+ or -) **1**	**2**	**3**	**Total**
1				(total +) ÷ (total trials) × 100
2				
3				
4				
5				
6				
7				
8				

Red Request Probes	**Trials** (+ or -) **1**	**2**	**3**
1			
2			

APPENDIX H

FIDELITY CHECKLISTS

Fidelity Checklist

Child: _____ Parent: _____

Video Date: _____ Observer: _____

☐ Sang the "Scooter Says" jingle with child
☐ Played the "Scooter Says" game and requested silly actions
☐ Used precision request sequence and delivered selected requests
☐ Avoided more difficult requests not targeted

		Trials (+ or -)			**Total**
	Criterion:	**1**	**2**	**3**	
1	Did parent gain attention prior to delivering request?				
2	Did parent deliver appropriate "please" request?				
3	Did parent allow time (3-5 seconds) for child to respond?				
4	Did parent provide immediate reinforcement or, ignore behavior?				
5	*Did parent deliver appropriate "need" request?*				
6	*Did parent allow time (3-5 seconds) for child to respond?*				
7	*Did parent provide immediate reinforcement, or ignore behavior?*				

$$\textbf{Total} = \frac{}{\textbf{[}(\text{total +}) \div (\text{total trials})\textbf{]} \times \textbf{100}}$$

Implementation Checklist

For Parents

☐ Sing the "Scooter Says" jingle with my child

☐ Play the "Scooter Says" game and request silly actions

☐ Use precision request sequence and deliver selected requests

☐ Avoid more difficult requests not being worked on

	Precision Request Sequence
☐	Gain attention prior to delivering a request
☐	Deliver an appropriate "please" request
☐	Allow enough time (3-5 seconds) for my child to respond
☐	Provide immediate reinforcement or, ignore inappropriate behavior
☐	Deliver an appropriate "need" request
☐	Allow enough time (3-5) seconds for my child to respond
☐	Provide immediate reinforcement, or ignore inappropriate behavior.

APPENDIX I

CONSUMER SATISFACTION QUESTIONNAIRE

Intervention Rating Scale

Adapted from the BIRS (Elliot & Trueting, 1991)

Please evaluate the intervention by circling the number which best describes your agreement or disagreement with each statement. You must answer each question.

1= Strongly Disagree 2= Disagree 3=Slightly Disagree
4= Slightly Agree 5= Agree 6= Strongly Agree

1.	This was an acceptable intervention for the child's problem behavior.	1	2	3	4	5	6
2.	Most parents would find this intervention appropriate for behavior problems in addition to the one addressed.	1	2	3	4	5	6
3.	The intervention proved effective in changing the child's problem behavior.	1	2	3	4	5	6
4.	I would suggest the use of this intervention to other parents.	1	2	3	4	5	6
5.	The child's behavior problem was severe enough to warrant use of this intervention.	1	2	3	4	5	6
6.	Most parents would find this intervention suitable for the behavior problem addressed.	1	2	3	4	5	6
7.	The intervention did not result in negative side effects for this child.	1	2	3	4	5	6
8.	The intervention would be an appropriate intervention for a variety of children.	1	2	3	4	5	6
9.	The intervention is consistent with other parenting techniques I have been taught.	1	2	3	4	5	6
10.	The intervention was a fair way to handle the child's noncompliance.	1	2	3	4	5	6
11.	The intervention is reasonable for the behavior problem addressed.	1	2	3	4	5	6
12.	I like the procedures used in the intervention.	1	2	3	4	5	6
13.	The intervention was good a way to handle the behavior problem.	1	2	3	4	5	6
14.	Overall, the intervention was beneficial for the child.	1	2	3	4	5	6
15.	The intervention quickly improved the child's behavior.	1	2	3	4	5	6
16.	The intervention will produce a lasting improvement in the child's behavior.	1	2	3	4	5	6

17.	The intervention improved the child's behavior to the point that it would noticeably deviate from other classmate's behavior.	1	2	3	4	5	6
18.	Soon after using the intervention, a parent would notice a positive change in the problem behavior.	1	2	3	4	5	6
19.	The child's behavior will remain at an improved level even after the intervention is discontinued.	1	2	3	4	5	6
20.	Using the intervention should not only improve the child's problem behavior at home, but also in other settings (e.g., other classrooms, home).	1	2	3	4	5	6
21.	When comparing this child with a well-behaved peer before and after use of the intervention, the child's and the peer's behaviors are more alike after the intervention.	1	2	3	4	5	6
22.	The intervention produced enough improvement in the child's behavior so the behavior no longer is a problem in the home.	1	2	3	4	5	6
23.	Other behaviors related to the problem behavior also are likely to be improved by the intervention.	1	2	3	4	5	6

- What aspects of this intervention did you like?

- What, if anything, did you not like about the intervention?

- What did you like about the Parent Training package?

- What, if anything, did you not like about the Parent Training package? **Children's Intervention Rating Scale**

Name: _____ Date: _____

Instructions to be read to participants:
I am going to read you some questions about playing the "Scooter Says" game. Please circle how you feel about each question. Circle the face under the 1 if you really disagree with the statement, the face under the 3 if you kind of agree, and face under the 5 if you really agree.

1. I liked watching the "Scooter Says*" video*

1. I liked singing the "Scooter Says*"* song.

2. I liked playing the " Scooter Says" game.

3. I liked playing with my mom.

4. What do you like about the game?

5. What did you not like about the game?

APPENDIX J

FACETIME SCRIPT

FaceTime Script

1. **Greet parents:** "Hello, *(Name)*! How are you?"
2. **Check in:**
    a. "How have the sessions gone this week?
    b. "Are there any concerns that we could address at our next home visit?" [Praise any progress the parent expresses].
    c. "I am so glad to hear that you have had success with [summarize successes]. It sounds like you have some concerns about [paraphrase concerns]. Let's discuss this some more during my next visit and come up with strategies to help you."
3. **State the purpose of the call:** "For today, I would like you to deliver the following commands to *(name of child)*." [Name requests].
4. **End the video call:**
    a. "*(Parent name),* thank you for taking the time to do that today. I am still planning to be there on *(date and time).* Will that still work for you?" [Reschedule as needed].
    b. "While I'm there, we will make sure to discuss the concerns about [name concerns] that you mentioned earlier. I look forward to seeing you two next week."

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